a W. R. C. Smith publication

FIFTY CENTS

Textile Industries

Formerly "COTTON"

MAY, 1956

New Series Starting This Issue

WARP SIZING

by Paul V. Snydel

It is filled with practical suggestions for slashing of cotton and spun and filament man-made yarns; begins page 99

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One Mill Increased Profits by Sharing Profits 109

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Complete contents on page 3

If air conditioning is in your future

Proper temperature and humidity control play an important part in the manufacture of quality textile products.

Leading textile companies have found that Robert and Company Associates can provide expert guidance in setting up air conditioning systems which meet the highest standards of the industry. Our many years of designing and engineering all phases of textile mill operation have consistently helped our clients achieve higher production and quality.

Whether your problem involves air conditioning, a more complex modernization program, or a streamlined new mill, we can assure you of service, coupled with knowledge and long experience, that will mean more profitable operation.

here's a good starting point

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Textile Engineering Division
ATLANTA

Serving the Great Names in Textiles for Over 40 Years

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Cabin Crafts, Inc.
Chicopee Manufacturing Corp.
Cluett Peabody & Co., Inc.
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Crystal Springs Bleachery
Davenport Hosiery Mills
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Fieldcrest Mills, Inc.
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Pepperell Manufacturing Co.
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J. P. Stevens & Co.
Swift Manufacturing Co.
Swift Spinning Mills
The Springs Cotton Mills
Thomaston Mills
United Merchants and Manufacturers Co., Inc.
West Point Manufacturing Co.

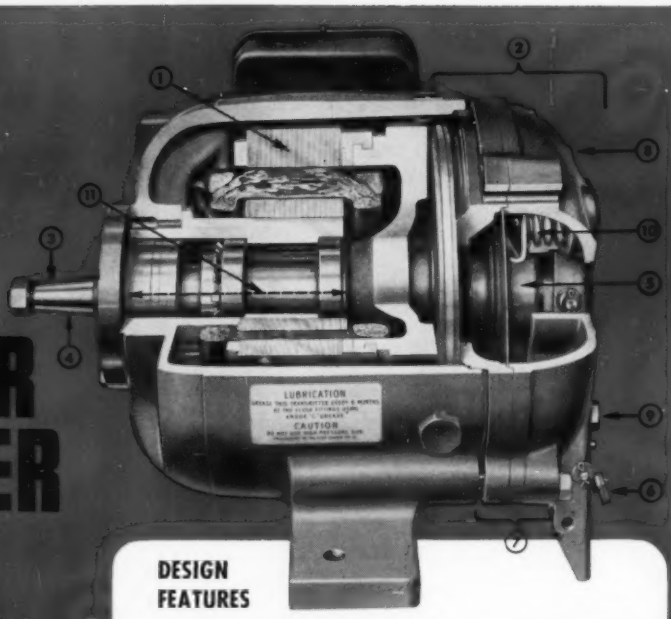
Next Month: Special Section on Tufted Textiles

Here it is!

THE NEW DIEHL "BA" POWER TRANSMITTER

For Draper Looms

Exclusive new design features mean
. . . *consistent* quality production . . .
peak operating efficiency . . . minimum
maintenance, labor and costs!

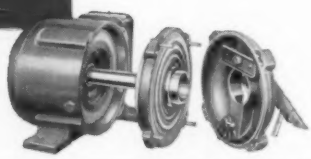


DESIGN FEATURES

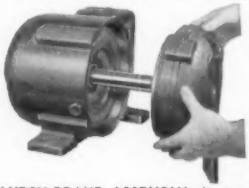
*1. High inertia inverted motor provides "stored energy" for smooth, fast starts and positive picking (maximum inertia with minimum size) . . . prevents regeneration.

STREAMLINED FRAME
Easy to clean. Roomy terminal box.

KINETIC BRAKING ACTION
(See Feature 6)



CLUTCH-ACTUATING BEARING—A strikingly new and improved method of mounting. (See Feature 5)



CLUTCH-BRAKE ASSEMBLY—Improved, simplified. Readily removable as a unit. (See Feature 2)

The original and only loom power transmitter . . . plus many new and outstanding design and construction features never before incorporated in a loom drive!

Over 40,000 Diehl Power Transmitters have been in continuous operation on DRAPER LOOMS—*most of them more than six years!* The new "BA" Power Transmitter is even *more* compact, more streamlined, *more* efficient and *more* easily installed and serviced than its famous predecessor.

It's an inverted-type high inertia motor combined with a fast, positive clutch-brake mechanism. Note the exclusive new design features—the clutch-actuating bearing mounting . . . the kinetic braking action . . . the unitized clutch-brake assembly. These important advancements mean increased production . . . improved cloth quality . . . lowered operating costs . . . fewer shutdowns. *Write, wire or phone today for full information.*

plus these outstanding New Features

*2. **CLUTCH-BRAKE ASSEMBLY**—Improved and simplified for positive action and ease of adjustment. Removes readily as unit for maintenance, without disconnecting motor from loom frame.

3. **PINION**—Free accessibility for installation and maintenance.

4. **SHAFT**—Large diameter, alloy steel, heat treated—assures long life, eliminates need for outboard bearing.

*5. **CLUTCH-ACTUATING BEARING**—New diaphragm mounting for frictionless clutch action, positive radial rigidity of bearing . . . eliminates fretting corrosion . . . means full self-alignment of bearing for maximum life.

*6. **KINETIC BRAKING ACTION**—For rapid, accurate stops. Particularly desirable for center fork detection looms.

7. **CLUTCH AND BRAKE ADJUSTMENT**—Simple and convenient. Provides visible check on brake alignment.

*8. **CLUTCH-SETTING INDICATOR**—Built integral with unit for instantaneous external checking of clutch setting.

9. **SAFETY LATCH**—Built integral with unit. Prevents accidental engagement of clutch.

10. **CLUTCH-LOADING ASSEMBLY**—Internally located, hence tamper-proof.

11. **SHAFT-END BEARINGS**—Arrangement simplified and improved. Two ball bearings and an extra large roller bearing assure maximum life.

**Exclusive feature—patent protected.*

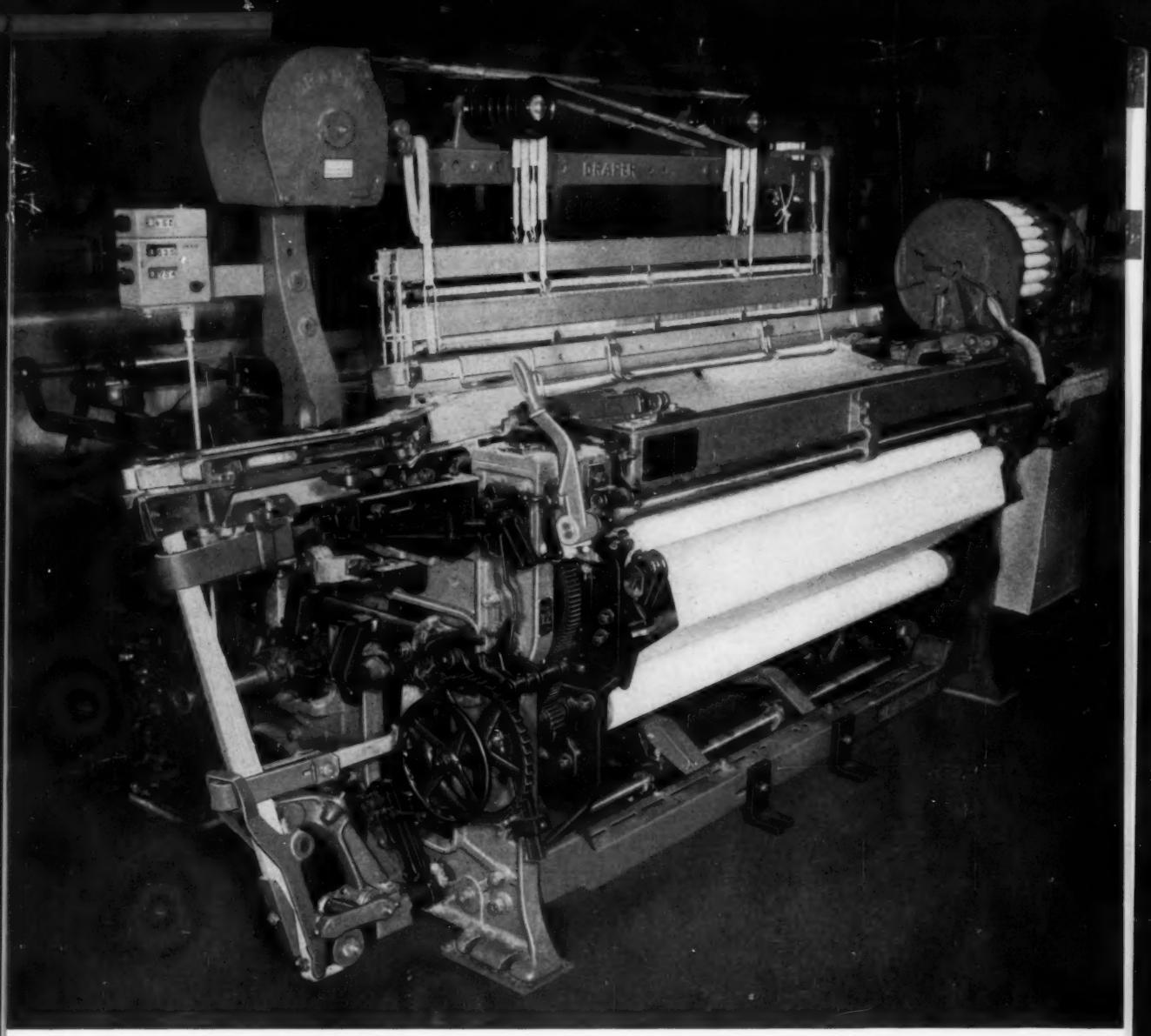
Diehl

DIEHL MANUFACTURING COMPANY

Electrical Division of THE SINGER MANUFACTURING COMPANY

Finderne Plant, SOMERVILLE, NEW JERSEY

ATLANTA • BALTIMORE • CHARLOTTE, N. C. • CHICAGO • CINCINNATI • DETROIT • MILWAUKEE • NEEDHAM, MASS. • NEW YORK • PHILADELPHIA • PITTSBURGH



A GREATER RANGE OF FABRICS CAN NOW BE WOVEN ON THE DRAPER X-2 MODEL LOOM

The adaptation of a new Draper High Roll Ratchet Take-Up for the X-2 model makes it possible to weave fine cottons or synthetics equally well on *one loom*.

Equipped with double take-up rolls, this take-up provides the increased frictional surface needed to hold the cloth when weaving spun or filament yarns.

A separate wind-up permits easier doffing. A pressure roll allows the cloth to be doffed without stopping the loom.

Linkage-Type Parallel Motions, Clock Spring Top, Center Fork Motion and many other refinements combine to make the Draper X-2 the most versatile loom in the world today.

DRAPER CORPORATION

HOPEDALE, MASS.

ATLANTA, GA.

GREENSBORO, N. C.

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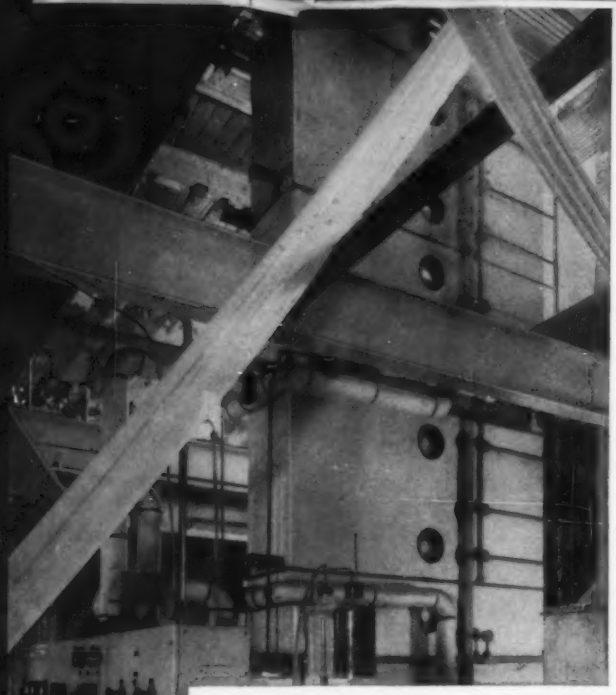
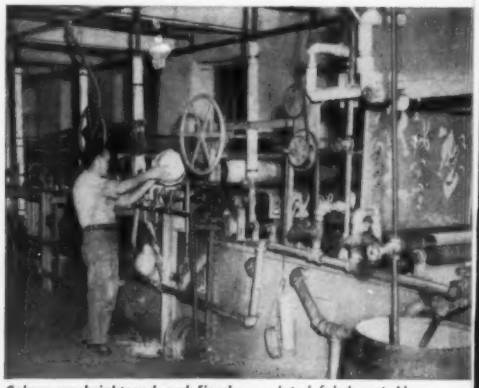


Becco J-Box systems are widely used throughout the textile industry to bleach woven or knitted fabrics. Your local Becco representative has full details on the new silicate-free bleach process which Becco is licensing freely to manufacturers.

BECCO® PROGRESS

IN PEROXYGEN CHEMICALS IS EVERYBODY'S PROGRESS IN TEXTILES



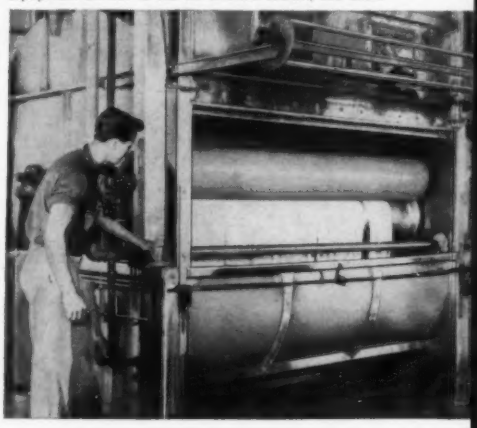
Colors are brightened and fixed on printed fabrics at Ahern Textile Print, Inc., Norwich, Conn. by passing through a solution of sodium perborate. Hydrogen peroxide is also used to bleach fabrics before printing by this New England customer of Becco.

Latest "first" in Becco's long history of leadership in Hydrogen Peroxide and other Peroxygen Chemicals is the recent announcement of SILICATE-FREE formulas for continuous hydrogen peroxide bleaching.

This silicate-free bleach process, patent pending, eliminates scale formation on equipment . . . provides new freedom from shutdown and prevents abrasion damage to the goods.

This and many other patented Becco processes are being freely licensed to the textile industry. Becco also makes available to you its vast experience in bleaching technology, its staff of technically trained field representatives, its strategically located supply facilities.

Peracetic acid bleaching of acetate rayon, nylon or mixtures of these, with or without cotton or viscose rayon, produces full white without fiber attack and permits complete mote removal, when bleaching cotton mixtures. Dye becks, jigs, and equipment similar to the installation shown, are used.



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Food Machinery and Chemical Corporation

Station B, Buffalo 7, New York

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NEW YORK • PHILADELPHIA • VANCOUVER, WASH.

fmc
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BECCO...Progress in Peroxygens

Becco Peroxygen Chemicals: Hydrogen Peroxide • Peracetic Acid • Sodium Perborate • Persulfates and others.

FMC CHEMICALS INCLUDE: BECCO *Peroxygen Chemicals* • WESTVACO *Phosphates, Barium and Magnesium Chemicals* • WESTVACO *Alkalis, Chlorinated Chemicals and Carbon Bisulfide* • NIAGARA *Insecticides, Fungicides and Industrial Sulphur* • OHIO-APEX *Plasticizers and Chemicals* • FAIRFIELD *Pesticide Compounds and Organic Chemicals*

NBP BPA

Textile Industries

Formerly "COTTON"

Vol. 120, No. 5
May, 1956

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"Our experience proves it
...for *fast* delivery of tubes
they're tops!"

From two strategically located plants—plus the mobility of our own fleet—we're able to give mills the *dependable* service they value so highly. Let us give *you* a sample of that service. You'll like it.

Textile Paper Products, Inc.

Cedartown, Ga. / *Crossett, Ark.*

Manufacturers of better Convolute and Spiral Wound Cloth Tubes, Carpet and Rug Cores, Yarn Tubes, Cloth Winding and Baling Boards, Beaming and Carlining Paper.

Prompt delivery by our own fleet throughout the South and Southwest.

Shorts and Remnants

By J. C. C.

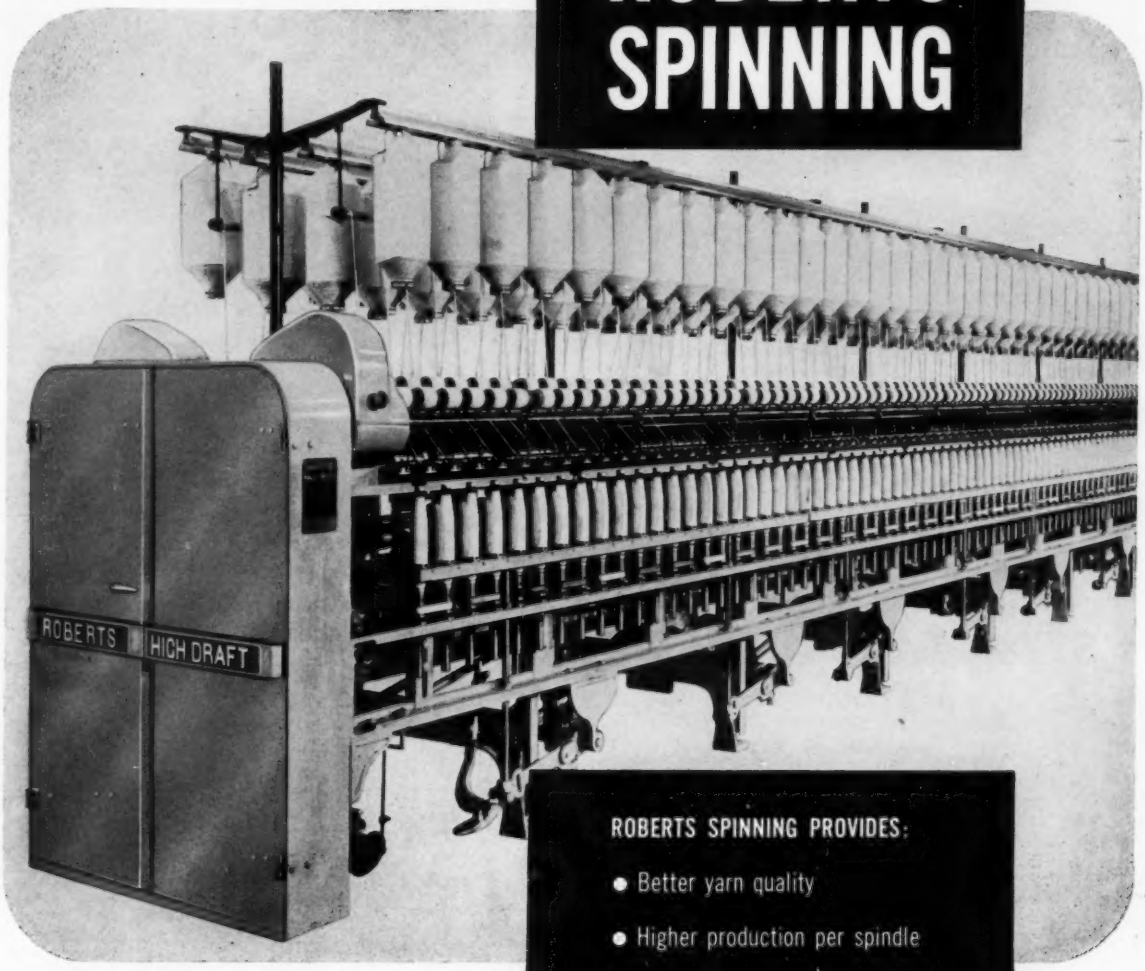
► Okay—if you are feeling your oats, trot out that barbershop tenor or bar-room bass and start yodelling "Spring, Beautiful Spring." Here it is again folks—one more Spring. Baseball, Bock Beer, Bunkers and Bogies are back. Bass are biting. Both blondes and brunettes are beautiful. Bushes are blooming. Business is booming. It's all just "Natcher'll" this time of year.

► Don't blame everything on the Spring, though, or on publicity agents either for that matter. Come to think of it, S&R asked for something like "Miss Labelon Tape" pictured below. The publicity guy says "Perhaps you can't use her in your columns, but isn't she a nice pinup." Who says we can't?

For the sake of our readers whose bifocals are cloudy or who have no magnifying glass, the acetate film and flatback labeling tapes carry such messages as "Fragile," "Caution," "Emergency," "High Voltage," "10% off," "Handle With Care"—courtesy of Labelon Tape Co., Inc., Rochester, N. Y.

► We're still getting requests for reprints on "Purchasing" which appeared in our February issue. **John W. Lay,** Dist. Mgr. Mechanical Handling Systems, asked for five copies. **G. B. Meynell,** Ad. Mgr. Amer. Cyanamid Co., Bound Brook, N. J., spotted it and canvassed his people and wanted 50. **M. R. Hawley,** Asst. Sales Mgr. Coleman Co., Inc., Greenville, S. C., says, "We feel that this is a must reading for all of our sales per-

ROBERTS SPINNING



ROBERTS SPINNING PROVIDES:

- Better yarn quality
- Higher production per spindle
- Increased package sizes
- Lower maintenance expense
- Lowest first cost

COMPARE ALL 3

For high production, top yarn quality, and dependability, Roberts Spinning is second to none in America today—and, at the lowest investment per spindle!

2¼ MILLION SPINDLES

In Changeovers and complete Frames—Roberts Spinning has been overwhelmingly accepted by American mills—over 2¼ million spindles now equipped with ROBERTS HIGH DRAFT.

Available in 39 inch, 36 inch and the new Roberts 25 inch width Frames.

All standard features used on Roberts Spinning Frames can be adapted as Changeovers to your existing frames.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA

Strapper furnished by Acme Steel Co.

High-speed case strapper served BY ALVEY...

...ENGINEERED CONVEYORS. This fast-strapping machine at a Pepperell Manufacturing Company mill is kept well-supplied with work by a specially engineered ALVEY conveyor system. The flow of filled cases to and from the strapper is accomplished without lost motion or delay.

Here's another example of how ALVEY conveyor systems are being integrated to control and coordinate the flow of work in modern mills.

Every time you MANhandle a product, you add to its cost...*without* increasing the value.

So, for profit's sake...*convey* your products.

ALVEY

ALVEY CONVEYOR MANUFACTURING COMPANY
9306 Olive Street Road • St. Louis 24, Missouri
Branch Offices in Principal Cities

228

For further information use Handy Return Card, Page 197

Shorts and Remnants

sonnel and would sincerely appreciate your furnishing us 6 or 8 reprints . . . should be of great interest to every one involved in buying or selling to the textile industry." **A. H. Gower,** Sales Mgr. Warwick Chemical Co., Wood River Junction, R. I., said "excellent," and wanted 17 copies. Another reader is more critical as he writes:

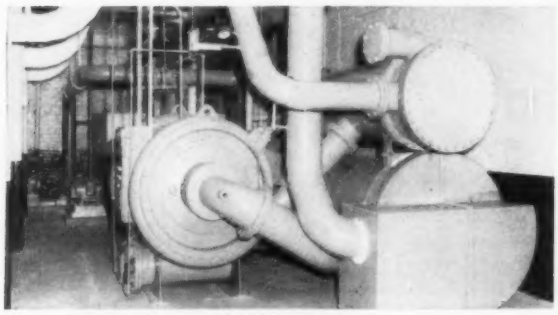
> "Your purchasing article interested me. It was well written but a bit pussy foot which I suppose can't be helped.
>
> "For instance if the . . . quiller can give a mill as much production for $1 invested, how can some of those big advertisers sell theirs which costs $2 for the same production.
>
> "If a . . . yarn dye kettle can produce superior results on a big cone which cuts the direct labor right in halves why do mills stick to little 1¼ lb packages?
>
> "Purchasing agents with power would not be guilty of such actions. Barnacles which hold back progress like interlocking financial interests, labor union opposition, and dumb superintendents drive good purchasing agents crazy."

Still another reader looks back on a world of experience and writes:

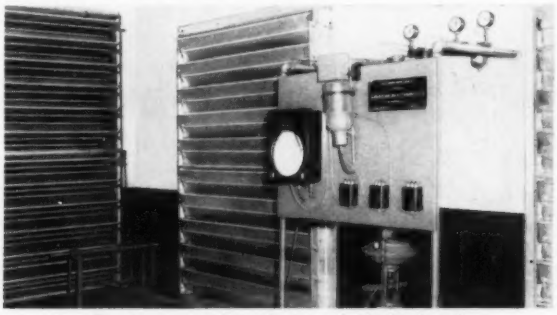
> "No you did not brag a bit in your S&R when you said that you thought that the article 'Purchasing for the Textile Industry' in your February issue was an interesting article. We could have added a lot more to it, especially about the 'Pay-Off' part of the game; also how badly some purchasing agents were paid and have to keep up their appearances with outside-gotten gains. Writer has been in the selling end of specialties for textile machinery since 1931 and what have we seen!!
>
> "Since we have four salesmen who do not have the experience that writer has undergone, we would appreciate very much indeed if we could obtain four copies of reprints of this article - - and if you do not have such copies of these reprints available, will you then send us four copies of the February issue of TEXTILE INDUSTRIES and send us the bill thereon? We want them all to learn the whole article by heart and then give them a few more facts of our own as well—perhaps we can then make real salesmen of them instead of just 'order takers'."

► Another good TI Service—annual summary of new mills, additions, and modernizations (in TEXTILE

Card room at Highland Park Mfg. Co., Mill No. 1, Charlotte, N. C. Ductwork and zone control atomizers are part of Amco's central station system, designed by J. E. Sirrine Company for the entire mill.



Refrigeration is supplied by a 350-ton Trane Centravac unit located in the basement.



The Amco control panel alongside the fresh and recirculated air louvers.

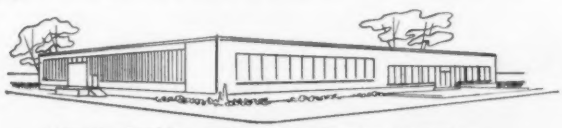
This ECONOMICAL split-system by Amco

provides thoroughly conditioned air, with maximum operating efficiency

Whether your need is for one room, or an entire mill, Amco offers air conditioning to meet your requirements. Amco designs and installs all types of systems — humidification alone; or in combination with cooling, such as in the ductless evaporating cooling system; unit dry-duct systems; or central station systems.

The central station system Amco recently completed at Highland Park Mill is a good case in point. In order to effect savings, it was felt advisable not to install the excess air capacity found in conventional design. Instead, Amco installed a "hand tailored" split system using a smaller central station unit augmented by room atomizers, thus reducing both initial cost and operating cost. This system provides complete control with even greater flexibility of operation. Savings have been substantial.

Amco engineers will be glad to work out a solution to any problem you may have. Next time call on Amco for reliable advice. There is absolutely no obligation.



New Cleveland-Rowan Plant of the American Moistening Company. This modern plant is located at Cleveland, N. C., for the fabrication of duct work and sheet metal products.

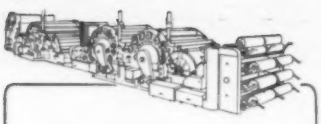
AMCO

AIR CONDITIONING SYSTEMS since 1888

AMERICAN MOISTENING COMPANY, PROVIDENCE, R. I. • ATLANTA, GA. • BOSTON, MASS. • CAMDEN, N. J. • CLEVELAND, N. C.

How record card room yields
are being achieved through Davis & Furber

"coordinated production"



COMPARE THESE D & F "COORDINATED PRODUCTION" FIGURES

Number of Card roping ends	80 to 192
Production, lbs/hrs	40 to 300
RPM, 7¼" dia. winding drums	30 to 70

(variations according to stock and yarn sizes)

"Coordinated production" requires careful, thorough study of many phases of mill operation – and qualified recommendations based on such study. Here are the primary ways D & F engineers help *you* achieve the advantages of Davis & Furber "Coordinated Production."

★ *Review your present card room operations.*

★ *D & F "in-the-mill" Technical Survey to analyze existing conditions.*

★ *Presentation of Davis & Furber recommendation*

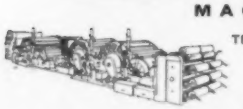
(a) *New equipment, supplies, and/or modernization.*

(b) *Establishing an efficient preventive maintenance program.*

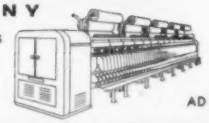
(c) *Supervising installation, adjustment of D & F machines during production runs of your stock under mill conditions.*

Get complete information now on D & F "Coordinated Production," from either North Andover, Mass., or Charlotte, N. C. Ask for your copy of The D & F News.

DAVIS & FURBER
MACHINE COMPANY



TEXTILE MACHINERY DESIGNERS AND MANUFACTURERS
North Andover, Mass.
Charlotte, North Carolina



AD 11-1

CARDS • SPINNING FRAMES • PREPARATORY MACHINERY • WARP DRESSING MACHINERY • FINISHING MACHINERY
MACHINERY MODERNIZATION • ACCESSORIES, SUPPLIES, SPARE PARTS • TECHNICAL SERVICE & CONSULTATION

Shorts and Remnants

INDUSTRIES News)—gets a compliment from **Henry Kaiser,** Union Special Machine Co., Chicago, Ill. Seems from his letterhead this is the 75th anniversary of our good friends up there—1881-1956. Congratulations to Union Special.

► On the subject of anniversaries, Whitin Machine Works goes them one better with "For 125 Years One Company with One Purpose—Service to the Textile Industry. 1831-1956." An orchid to Whitin.

► Another anniversary letterhead from Tinius Olsen Testing Machine Co., Willow Grove, Pa., says they have had several inquiries from ad in Nov. '55. Seems it was a New Equipment item on Electromatic testing machine. They are still using 1955 stationery as it says "75th Anniversary—1880-1955."

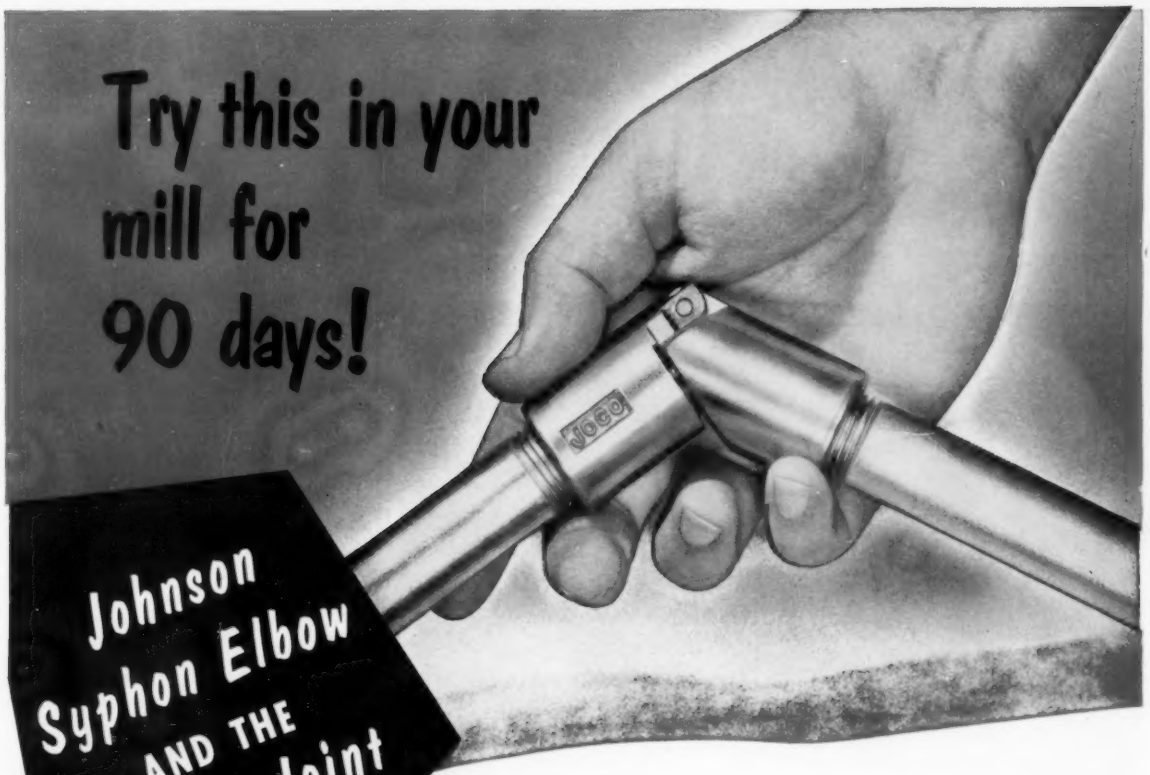
► "How to get more publicity and improve Press Relations" was a major theme of one recent textile association meeting. Only trouble was that they kicked the press out at the start of the meeting, including a TI editor who was invited and had traveled from afar (well *pretty* afar). Seems it was a closed session.

► Another good textile association addresses a letter to David Clark, Editor TI. The late Dave Clark and our respected friend and competitor would roll over in his grave at that. Maybe they believe that "all good editors go to TI when they die." Well, some good ones go there while alive.

► Romar Knitting Mills, Allentown, Pa., writes they are interested in contract knitting. Seems they have "26" 24-cut interlocks, all sizes of 12-cut ribs, also 96-feed jersey with 18- and 20-cut cylinders." Sounds like an ad to us, but if anyone is interested, there you are.

► Folks get us all mixed up. Dawood Cotton Mills, Ltd., Karachi, Pakistan, writes to subscribe to "American Dyestuff Reporter." **Earle W. Sargent,** Carolina Belting Co., Greenville, S. C., writes for reprints and a subscription to "Textile World." The name of this here magazine is TEXTILE INDUSTRIES. We'll let you read some of those other magazines if you insist but *Keep Your Eye on TI.* Maybe we'd get a commission

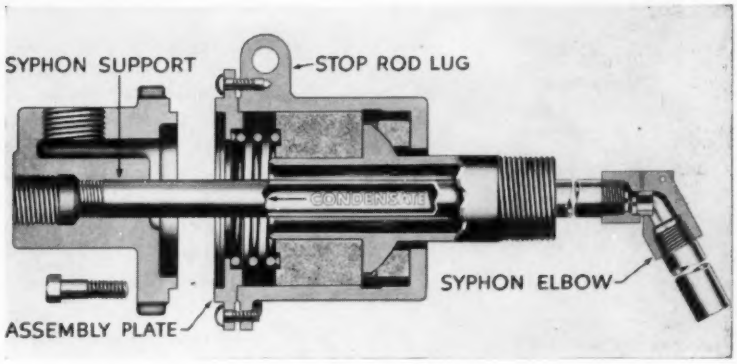
Try this in your mill for 90 days!



Johnson Syphon Elbow AND THE Johnson Joint

Learn why so many thousands of these new mechanical syphon elbows have already been installed. See right in your own mill how they team up with Johnson Joints to end many of the troubles of ordinary syphon drainage pipes. We'll gladly supply a couple of these combinations for a 90-day trial, and even prepay the shipping charges if you wish. There are no strings to this offer, no obligation to you.

Johnson Syphon Elbows are available in ¼", ⅜", ½", ¾" and 1" sizes. To get full information write, wire or phone us right now.



Type SB 2-P Johnson Rotary Pressure Joints

Johnson Joints make a pefect combination with the new syphon elbow. They are completely packless, self-lubricating and self-adjusting. For this service a special assembly plate is provided to hold internal parts in position when head is removed; complete syphon pipe, including the new elbow, can be removed right through the joint, in many cases while the machine is operating. Picture above shows the complete combination; the other two do not show assembly plates or syphon elbows.

THE JOHNSON CORPORATION

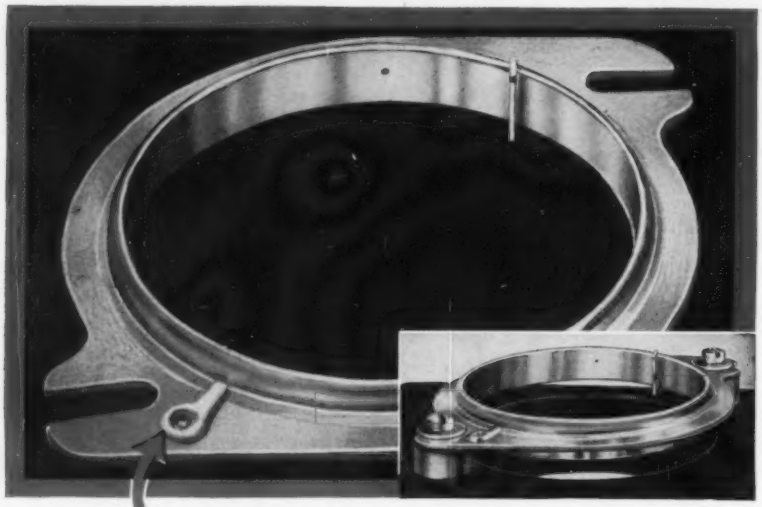
815 WOOD ST., THREE RIVERS, MICH.

Rotary Pressure Joints • Direct Operated Soleneid Valves

Guaranteed

FOR 2 YEARS

OF NORMAL SPEEDS 3-SHIFT OPERATION



OIL HERE
ONCE IN 24 HOURS

Set flush, or above ring rail
to avoid fly-loading and caking

Ragan
SELF-LUBRICATING
Rings

Even at higher sustained speeds, these rings far outwear machined rings and give balanced traveler wear, but cost no more. Because they lubricate themselves. Because of special heat-treating and super-smooth finish. Because of the unique deep oil-well construction and absence of wicks to carbonize.

They spin worsted, synthetics and mixtures. They twist cottons. Sizes ready: 2 3/4 x 7/16 and 2 1/4 x 7/16. Four leading makers are delivering travelers designed for them.

RAGAN RING COMPANY

The South's own manufacturer of
all styles of spinning, common and vertical twister rings.

901 S. Main Street, East Point, Georgia

•

REPRESENTATIVES: H. B. "Booch" Askew, P. O. Box 424 Griffin, Ga. • Chalmers H. White, Route 6, Box 644, Charlotte, N. C. • L. O. Talley, P. O. Box 1169, Mexia, Texas • William R. Fox, P. O. Box 380, Providence, R. I.

Shorts and Remnants

on the subscriptions.

► **Heinz Feldmann,** Taborstrasse 21a, Vienna, Austria, wants continuous filament synthetic yarns for stockings and underwear. Seems they have the dollars to pay. **Ralph Padgett,** Mgr. Sales Service, Roberts Co., Sanford, N. C., writes us that he is going to Germany, Switzerland, Italy, France, and also Holland in connection with Roberts spinning installations. That is OK with us; he must be getting some of those dollars. **R. P. Ellsworth,** buyer B. F. Goodrich Co., Brecksville, Ohio, wants a Jan. '50 issue.

► National Plastic Products Co., Odenton, Md., writes that Cyd Charisse (pictured below) is the key

personality in their current "Saran Stars for Summer Furniture Promotion." We don't know how you feel about it, but she could sell us some furniture, winter or summer. Where did they get that name Saran? Did somebody at National have a daughter named "Sarah Ann" like some of the textile mills. There's Mary Leila Cotton Mills, Greensboro, Ga.; Catherine and Eva Jane plants of Avondale Mills, Sylacauga, Ala.; or Mary Ann plant of this group in Pell City, Ala.; Alice Mfg. Co., Arial and Easley, S. C.; Joanna (S. C.) Cotton Mills Co.; Julliette Milling Co., Macon, Ga.—to mention just a few.

► Speaking of names, there is a town in Ga. called "Plum Nelly" because its "plum" out of Tenn. and "nelly" out of Ga. Another one is named "Between" because its between Athens and Atlanta.

"Batik Process"

"We are very much interested in

M-P

is the *only loom* made that can handle *all* these constructions . . . *on a competitive basis*

As the trees leaf out, fabric-fashions likewise blossom in bright new colors and subtle combinations . . . in a bewildering and *ever-changing* array.

These sudden fashion-changes can mean "sudden death" in many weaverooms . . . but not in those that have the **Maximum Protection** of **M-P** Looms. For these new C & K Looms are the *only* looms that can handle *all* constructions . . . *plain or fancy* . . . and can be converted from one to the other *overnight*.

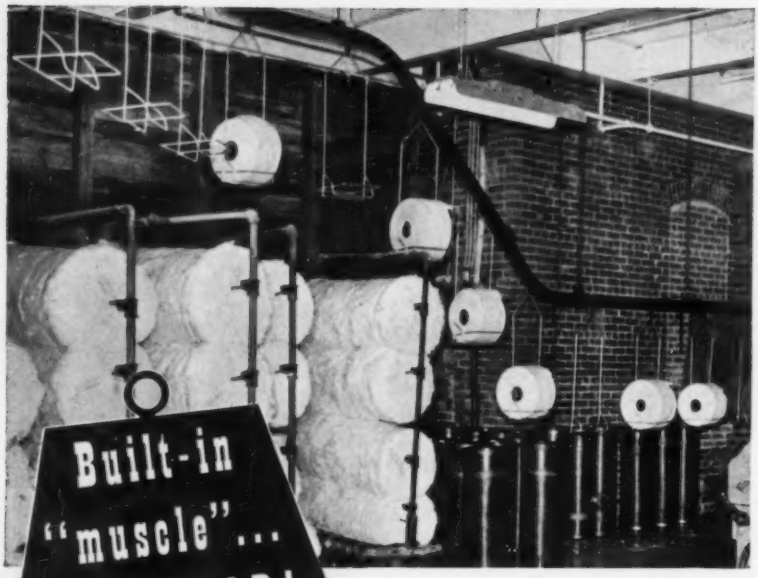
That's why these all-new **Multi-Purpose Looms** give the **Most Protection** you can get for your weaveroom in today's highly changeable, highly competitive markets. See C & K today.

This "Invisible Trademark" Stands Back of the Trademarks of the World's Finest Fabrics . . . which are **WOVEN FABRICS.**

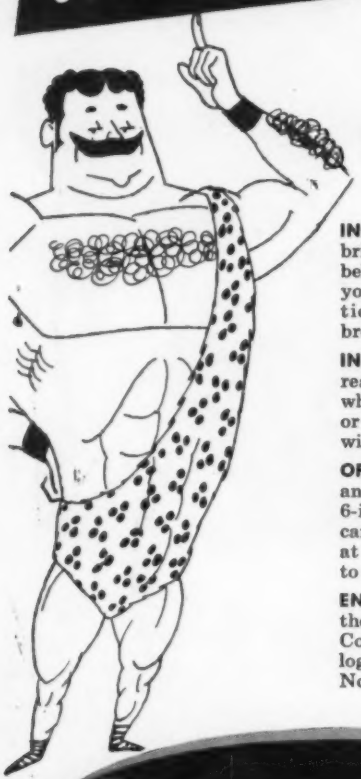
CROMPTON & KNOWLES *Loom works*

WORCESTER 1, MASSACHUSETTS, U. S. A.

CHARLOTTE, N. C. • PHILADELPHIA, PA. • ALLENTOWN, PA.
Crompton & Knowles Jacquard & Supply Co., Pawtucket, R. I.
Crompton & Knowles of Canada Limited, Montreal, Quebec



Richards-Wilcox
"Zig-Zag"®
Continuous Power
Conveyors



INCREASE EFFICIENCY—Zig-Zag conveyors bring materials in overhead to working levels below. They're safety-engineered to protect your products and personnel. Your production moves smoothly. Bottlenecks are broken. And you save floorspace.

INSTALL EASILY—Zig-Zag conveyors conform readily to almost any plant layout. And when necessary, they can be altered, expanded or relocated by your plant personnel—usually without waste of a single part.

OPERATE SIMPLY—Loads go up, down, in, out and around, "like water through a pipe." 6-inch pendant centers handle any load a man can lift. Choice of drive units permits travel at any required speed, with variations of 10 to 1 or better.

ENGINEERING HELP—To learn more about the advantages a Zig-Zag Continuous Power Conveyor brings to your plant, write for Catalog No. A-93. Or, consult an R-W engineer. No obligation of course.

Richards-Wilcox
MANUFACTURING COMPANY
Materials Handling Division

Use RICHARDS-WILCOX INDUSTRIAL & FIRE DOORS, DOOR HARDWARE, ELECTRIC OPERATORS "Made for each other"

440 W. Third Street • Aurora, Illinois • Branches in Principal Cities

Shorts and Remnants

the article, 'The Batik Process Adapted to Production' [Mar. '56]."

D. C. CHURCHILL
Churchill Weavers, Inc.
Berea, Kentucky

► This inquiry directed to Joseph Schnall Textile Screen Engravers, Brooklyn, N. Y.

Tar Spots Again

"I would appreciate it very much if you would send me two copies of the article [Mar. '55] . . . pertains to grease, paint and tar remover."

GEORGE FINE
Old Fort Finishing Plant
Old Fort, N. C.

Handling Lubricants

"Have just finished reading your fine article 'Here's what Can Happen When Lubricants Are Not Properly Handled at the Mill' [Mar. '56]. As proper lubrication is so important to the successful textile machinery performance as well as prevention of stains to cloth and yarn, information you are presenting on handling lubricants, we know, will be received with great interest by your readers."

A. C. KEISER, JR.
Asst. Div. Mgr.,
The Texas Co.
Atlanta, Ga.

Wants Lace Machinery

"In this export business, we occasionally receive requests for textile machinery that we know nothing about and are unable to locate the proper manufacturer. Recently, we received such a request for a machine to produce laces (not shoe laces) to be used in trimming and in lace textile products generally. . . "

PHILIP R. PETERSEN
Gen. Mgr.
International Sales Management Co.
Charlotte, N. C.

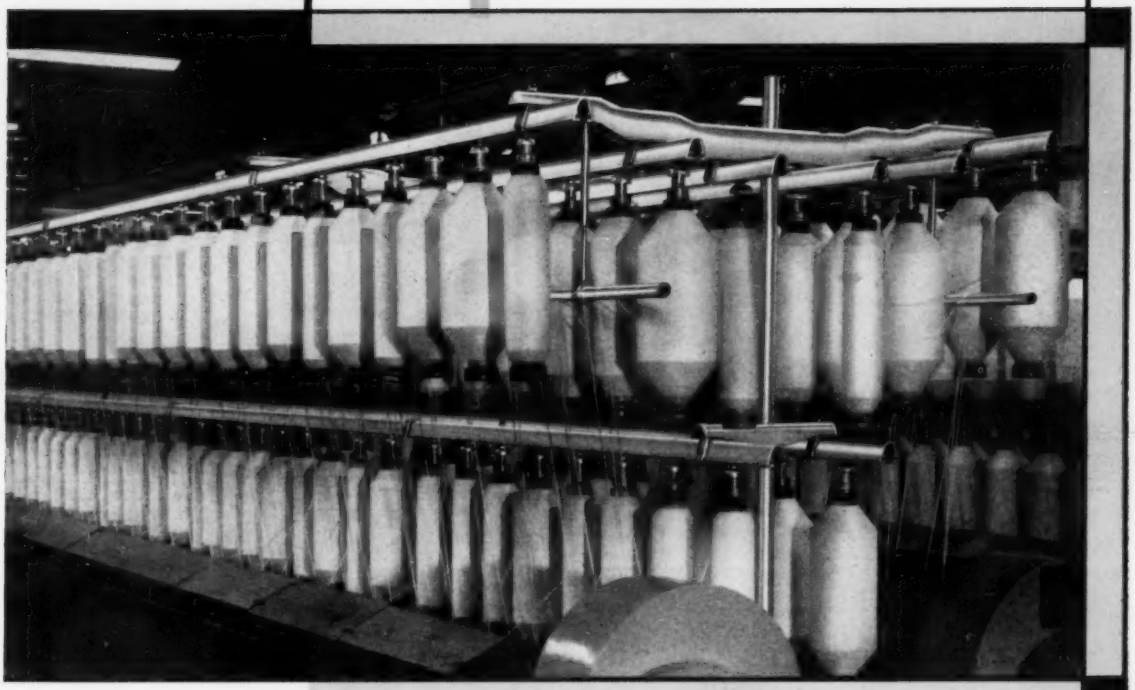
► We suggested Kidde Mfg. Co., Belleville, N. J.; also Robert Reiner, Inc., Weehawken, N. J.

More Inquiries from TI

" . . . We have traced more direct inquiries through your magazine than through others in the field. What especially amazes me is the fact that your publication must really get around, since we've received 2 inquiries from Hong Kong, and 1 each from Argentina, Brazil, Colombia, S. A., Turkey, India, and Holland. You may be sure that TEXTILE INDUSTRIES will play a part in any advertisement

INVESTMENT IN EARNING POWER...

SpinSaCreel



Engineered and manufactured to increase profits, production, and efficiency of your spinning frames.

The SpinSaCreel is designed with an open top to allow the overhead cleaner to distribute air thoroughly above and around the creel and roving packages to keep it free of lint.

The cross arms are constructed of cast aluminum for maximum strength, and the bobbin holder tracks are extruded aluminum shaped to prevent lint accumulation. The bobbin holders can be moved to accomodate various gauges and packages, single and double roving.

The SpinSaCreel is designed to compliment the SpinSaVac, a system which removes and collects broken ends, fly or sliver. This combination of cleaning and material recovery is truly an "investment in earning power"!

Leaders in the Field of Textile Material Recovery

SPINSAVAC

SpinSaVac Corporation

P. O. Box 533 Telephone FRanklin 7-4741

CHARLOTTE 1, NORTH CAROLINA

Dayton
3415 P
THOROBRED
DeLuxe

3 point density control . . .

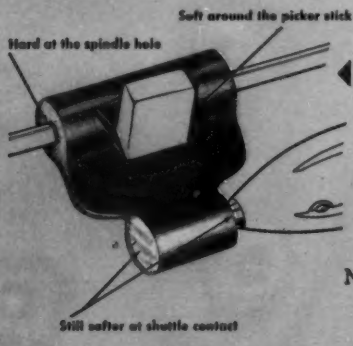
Protect vital loom parts
Reduce maintenance costs

with Dayton Thorobred | Drop Box Pickers Lug Straps

You're insuring the life of vital, expensive loom parts when you equip your looms with Dayton Drop Box Pickers. Cushioning action of shuttle-contact area protects shuttle points for millions of picker throws. Extra-resilient compound around picker hole absorbs tremendous shock of repeated shuttle contact, safeguards picker and connecting loom parts. Tough, durable composition in the spindle hole lasts longer, requires no lubrication.

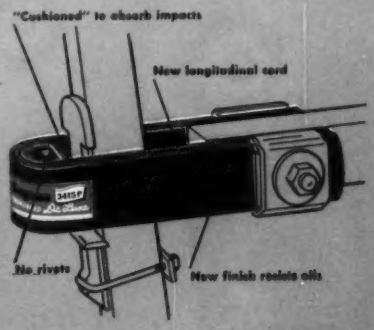
Key to protection of costly picker mechanism is the Dayton Thorobred Deluxe Lug Strap. Controlled elasticity in the molded-in plug cushions picker thrusts safeguards loom parts. Newly designed, one piece construction assures longer service life, and special longitudinal cords guard against fatigue and permanent elongation. In actual tests against other types of lug straps Daytons gave 2 to 3 times the service life, better protection to looms.

For full information on how you can safeguard costly loom parts and reduce replacement costs with Dayton Thorobred Drop Box Pickers and Deluxe Lug Straps, contact your Dayton textile Distributor or write Dayton Rubber Co., Textile Division, 401 S. Carolina National Bank Bldg., Greenville, S.C.



Thorobred Drop Box Picker
Absorbs loom shock,
protects loom parts!

Thorobred Deluxe Lug Strap
One piece construction!
No rivets or other parts to work loose!



© D.R. 1956

Dayton Rubber
51 YEARS OF PROGRESS

Dayco and Dayton Thorobred Products for Better Spinning and Weaving.

Booth

Originators of STRIP-O-MATIC*

CARD CLOTHING

SUPR-O-TAPE

THE FIRST AND ONLY SUCCESSFUL FABRIC TAPE FOR CONDENSERS

Two years of actual mill use testifies to these amazing facts:

- Longer Life
- Extra Strength
- Increase Production
- Improve Quality
- Surface Won't Crack
- No Oiling Needed
- Yarn Uniformity Improved
- No Stretch—Less Sag
- Keep Square Edges
- Retain Full Width
- No Breaking In
- Permit Wider Range of Counts
- Fewer Ends Down
- Easily Cleaned
- Endless or Continuous
- Belt Hooks Hold
- Not Affected by Emulsions

STRIP-O-MATIC CARD CLOTHING *IN TWO TYPES*

CONVENTIONAL CARD CLOTHING

QUALITY AND SERVICE FOR 65 YEARS *Patented

BENJAMIN BOOTH COMPANY

ALLEGHENY & JANNEY STS., PHILA., PA.

Booth

Shorts and Remnants

program we have."

MALCOLM D. HAVEN
Pres.
Livingston & Haven, Inc.
Charleston, S. C.

Activity Vector Analysis (Mar. '51)

"Going through some old TEXTILE INDUSTRIES I came across the March 1951 issue. There is an article in it by Bill Eastman, entitled Activity Vector Analysis which I found very interesting. . . . Tell me how I could get more details . . . for the purpose of applying it in our mills."

RAFAEL DEL RIO
Litton Spinning & Weaving Mills, Inc.
Manila, Philippines.

► Further data can be had from Walter V. Clarke Associates, Barrington, R. I.

Machine Down Time Recorded

"I seem to recall reading in one of your issues about a device which will automatically record the duration of machine down time. In looking back through your latest publication, I am unable to find another reference. . . "

JOHN W. THOMPSON
Industrial Engineer,
Drayton Mills
Spartanburg, S. C.

► Mr. Thompson, you didn't go back far enough. Said article started p. 114 Dec. '55 and concerned recorder of Heat-Timer Corp., New York, N. Y., an advertiser in TI pages.

Wants Copies Mercerizing Article

" . . . We would like very much to procure two or three copies of this article [Practical Piece Goods Mercerizing, Mar. '55]."

P. A. HENTERICHER
Ernest Scott & Co., Inc.
Fall River, Mass.

Wants Pneumafil Booklet

"Please forward us booklet #439 on Pneumafil suction cleaning systems described in the March, 1956, issue of your publication. . . "

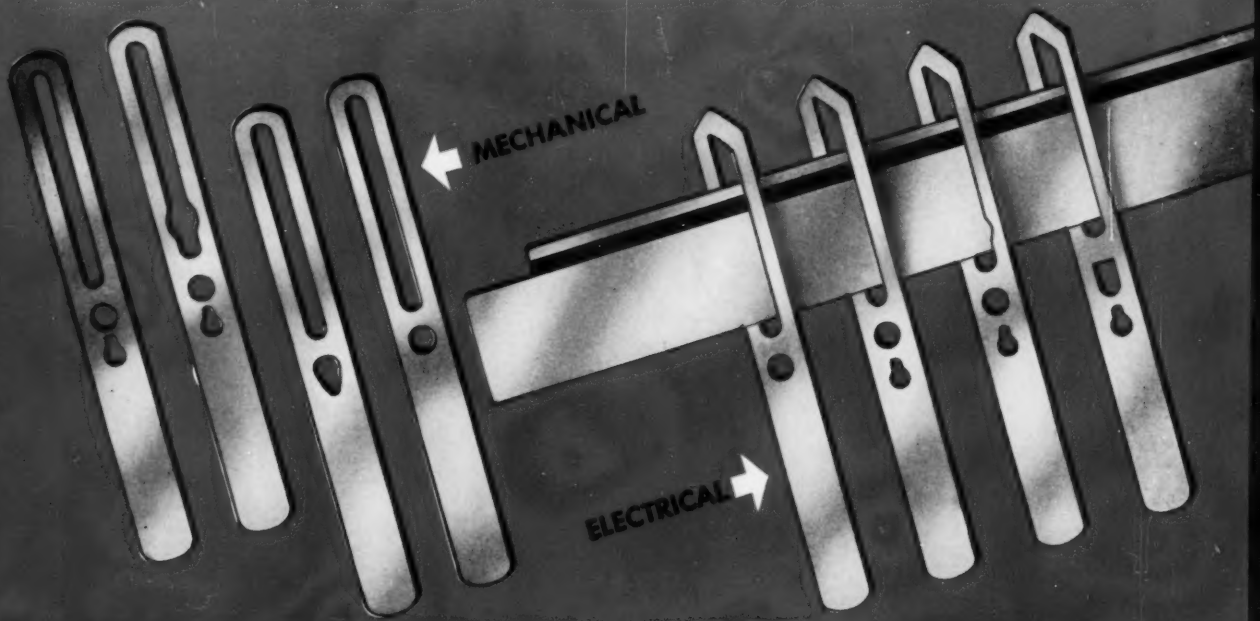
WM. P. DURLAND
Supt. Purchasing
Celanese Corp. of Amer.
Cumberland, Md.

► "Helpful Booklets Free" continues to draw many inquiries, along with "New Equipment Parade" items and ad pages. Just use the reply cards for all of these—no postage required. If you don't see what you want, ask for it. *(Continued page 18)*

Stehedco

SUPERIOR QUALITY
PROMPT DELIVERY

DROP WIRES • ELECTRODE RODS



IMPROVED EFFICIENCY for INCREASED PRODUCTION!

With STEHEDCO Electrical and Mechanical Drop Wires, the *"Watchmen for the Weaver"*. . .

Large stocks on hand guarantee prompt delivery of STEHEDCO Supreme Quality Drop Wires in all weights for all sizes of Warp Yarn, supplied in galvanized, copper, nickel finish and stainless steel.

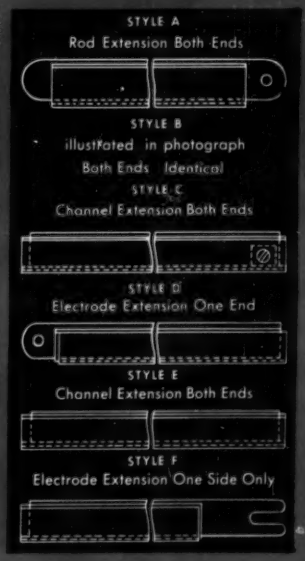
STEHEDCO facilities are more than adequately prepared to serve those mills requiring such services as refinishing *Old Drops* or repunching them for use with Drawing-in machines.

STEHEDCO Electrode Rods are made of Stainless Steel with Fibre Insulation and may be had with special plastic insulation of high dielectric strength, for use with electronic or other sensitive relays.

Ordering is simple:—

When ordering Drop Wire, Mechanical or Electrical, furnish sample or use the diagram illustrated. (to left) Designate style, Width, Thickness, and Finish desired.

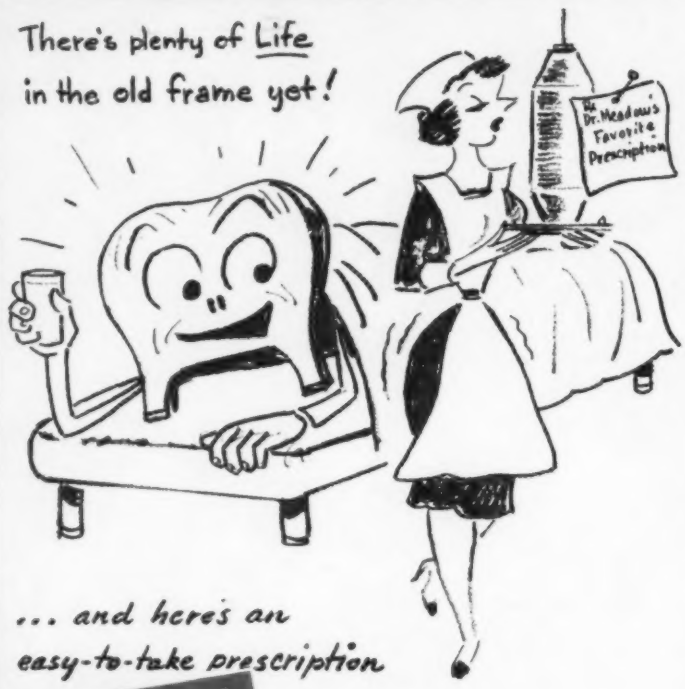
When ordering Electrode Rods specify style and length. (see diagram to right).



Stehedco and Southern
WORLD FAMOUS TRADE MARKS OF THE
Steel Heddle
Mfg. Co.

STEEL HEDDLE MFG. CO., 2100 W. Allegheny Ave., Phila. 32, Pa
SOUTHERN SHUTTLES Paris Plant . . . Greenville, S. C.
A Division of STEEL HEDDLE MFG. CO.
STEEL HEDDLE COMPANY OF CANADA, LIMITED
310 St. Hubert Street • Granby, Quebec, Canada

Other Plants and Offices: Greenville, S. C. • Atlanta, Ga., • Greensboro, N. C. • Providence, R. I.
Textile Supply Co., Dallas, Texas • Charles H. Dunker Co., Los Angeles, Calif • Albert R. Breen, Chicago, Ill.



NEW-FRAME RESULTS...

BIG-PACKAGE ECONOMY

AT HALF THE COST!

Full Meadows conversion can take your old frames and s-t-r-e-t-c-h them to handle big packages. For about half the price of new frames, you will get the quality and the production of new frames. For a quarter century we've been rebuilding old spinning and twister frames — from floor to creel if they need it — and we know our stuff.

That's an easy-to-take prescription, isn't it?

MEADOWS MANUFACTURING COMPANY

ATLANTA, GEORGIA

REPRESENTATIVES:

G. F. (Jack) STANLEY, P. O. Station A — Box 3223, Greenville, South Carolina
SAM R. HOGG, P. O. Station A, Atlanta, Georgia
MATTHEWS EQUIPMENT CO., 93-A Broadway, Providence 3, Rhode Island
WALTER S. COLEMAN, P. O. Box 782, Salisbury, North Carolina

Shorts and Remnants

(Continued from page 16)

Excellent Job

" . . . You did an excellent job of presenting our material [Underwater Effluent Line, Jan. '56] . . . "

WM. E. McFEE
Armco Drainage & Metal Prod. Inc.
Middletown, Ohio

Wants Leno Weave Fabric

"I am wondering if you could give me any information as to what mills might be in a position to furnish a leno weave fabric similar to the enclosed sample. . . . without cotton coating. . . . "

JOHN L. ROSS
Mgr.
Diana Mfg. Co.
Green Bay, Wis.

► Diana makes sanitary napkins and similar items. Any mill with suitable leno weave, please contact.

Liked "Tricot Warping Controls"

"We think you did an excellent job with your article on Tricot Warping Controls [Mar. '56]."

WILLIAM D. SCOTT, JR.
Blue Ridge Textile Co., Inc.
Bangor, Pa.

Wants Data "Whirlwind" Twisters

"We should be obliged if you could put us in touch with the maker of the 'Whirlwind' twisting machine. . . "

J. W. FIELDER
Geo. Thomas & Co., Ltd.
Manchester, England

► That's Warner & Swasey Company, Cleveland, Ohio.

Mr. Yarn Mercerizer— Are You Interested?

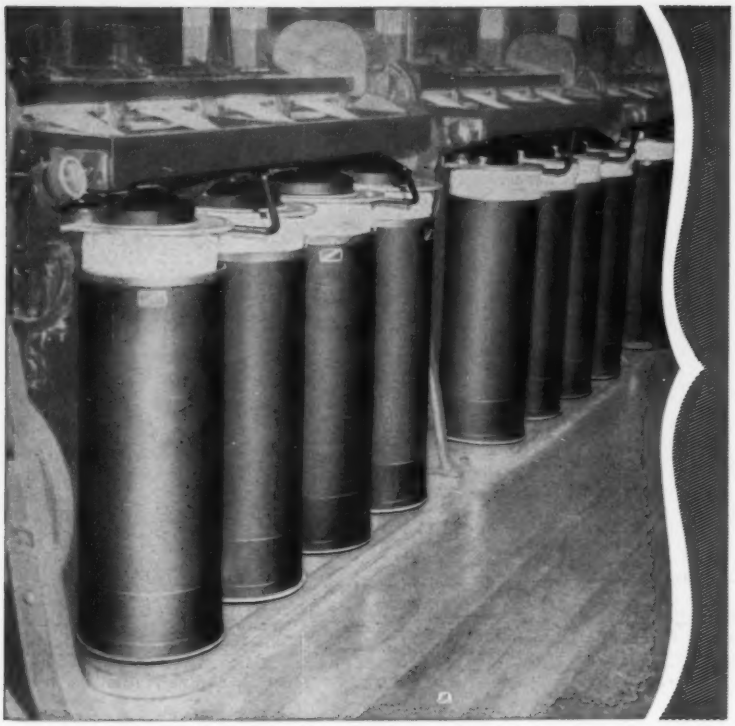
"Some time ago the writer, through your labour Dept. at Washington, D. C., made an effort to contact various firms in the U.S.A. who would be interested in Mercerized Cotton Yarns, from a Warper's Beam, through to a Weavers Beam or to a Beamer. Processing up to 1,500 lbs a day, this of course depends on the counts and ends going over the steam heated cylinders, revolving from 3-8s to 2-80s. . . . Someone (Engineers) could fix such a machine up just as this firm in England did *and I can show them how to do it.* In other words, Mr. Editor, I would definitely like to get in touch with someone in the U.S.A. who would be interested. . . . "

SAMUEL ALLEN
720 Gerrard St. E
Toronto 8, Ont. Can.

Du Pont's "Sevron"* Dyes for "Orlon"* and blends with "Orlon"

For easy duplication of shades from run to run on fabrics of "Orlon" acrylic fiber, be sure to use Du Pont "SEVRON" dyes. Developed specifically for "Orlon" and blends with "Orlon," these dyes give good light- and excellent wash-fastness. They are level-dyeing for consistent results. Available for a wide range of colors, "SEVRON" dyes may be applied directly to top, stock, yarn and piece goods without using the copper method. Our technical staff will be glad to work with you. Write E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Department, Dyes and Chemicals Division, Wilmington 98, Delaware.

*REG. U. S. PAT. OFF.



HOW SOUTHERN STATES COMPLETE COILERS AND CONVERSION UNITS CUT CARD ROOM OPERATING COST

Mill case histories prove over and over that Southern States coiler conversions pay for themselves in less than a year!

Adding up to lower operating costs and savings you can see are—larger cans with increased capacity . . . renewed life of old coilers, longer life of new coilers . . . lower maintenance costs . . . smaller parts inventories . . . simplified, more efficient handling . . . plus improved quality.

Recognizing that each mill is faced with different problems, Southern States has produced the most complete line of coiler and coiler conversion units available to the industry. Thus, regardless of sliver handling methods, or condition of existing equipment, Southern States makes it possible for your mill to enjoy all the advantages of larger cans at a price you can afford.

Complete details are in our Bulletin 201, which we'll send on your request. Better still, let our representative show how Southern States conversions can cut your card room costs.

SOUTHERN STATES
EQUIPMENT CORP.
HAMPTON, GEORGIA

Personal NOTES
ABOUT MEN YOU KNOW

The American Society for Testing Materials recently elected **Prof. Benjamin L. Whittier** of North Carolina State College as chairman of Committee D-13 on textiles. At the same time **S. J. Hayes,** director of research for Ludlow Manufacturing Co., was named first vice-chairman and **Prof. Kenneth L. Hertel** of the University of Tennessee, second vice-chairman. **H. A. Ehraman** replaced William H. Whitcomb as secretary.

The American Institute of Electrical Engineers recently elected **J. D. McConnell** as chairman of the textile subcommittee, succeeding Victor Sepavich of Crompton & Knowles Loom Works. Mr. McConnell is plant engineer of Cone Mills Corp., Greensboro, N. C. Vice-chairman of the subcommittee is **R. B. Flowers** of General Electric Co. in Atlanta, Ga.; and the new secretary is **R. H. Clark** of Warner & Swasey Co., Cleveland, Ohio.

Jesse D. Brown, editor of Union Bleachery's "The Commentator," won an award from the Freedom Foundation of Valley Forge, Pa., for his contribution to a better understanding of the American way of life during 1955. In recognition of his editorial "What Is A Child Worth" he received a $50.00 cash prize and the George Washington Honor Medal. Mr. Brown, who is director of community activities, has devoted much of his time to the Y.M.C.A., the Boy Scouts, and other projects for young people.

Callaway Mills Co., LaGrange, Ga., recently promoted **J. W. Lewis** from assistant overseer of spinning, twisting, and winding at the Valway plant to overseer of carding and spinning at the Calumet plant. He succeeds **Gordon Williams,** who is now overseer of carding at Valway.

Summey Cauble, Jr., formerly assistant superintendent of the Valdese (N. C.) Manufacturing Co., is now superintendent of the Arlington plant of Textiles-Incorporated, Gastonia, N. C.

Cone Mills Corporation has transferred **Hoyt Wiggonton** from the Dwight Plant at Alabama City, Ala.,

to the Pineville, N. C., Plant, where he is personnel assistant. **Robert Crews,** who formerly held that post, has been assigned to the production training program.

R. A. Lukens, formerly vice-president and treasurer of Continental Mills, Inc., Lena and Armat Streets, Philadelphia, Pa., succeeded **M. D. Brown** as president. Mr. Brown was recently named chairman of the board.

Sam Daniel, who was formerly with Burlington Industries at Gastonia, N. C., has joined Fieldcrest Mills. He is assistant to the vice-president in charge of purchasing cotton and raw materials for the Leaksville and Spray, N. C., plants.

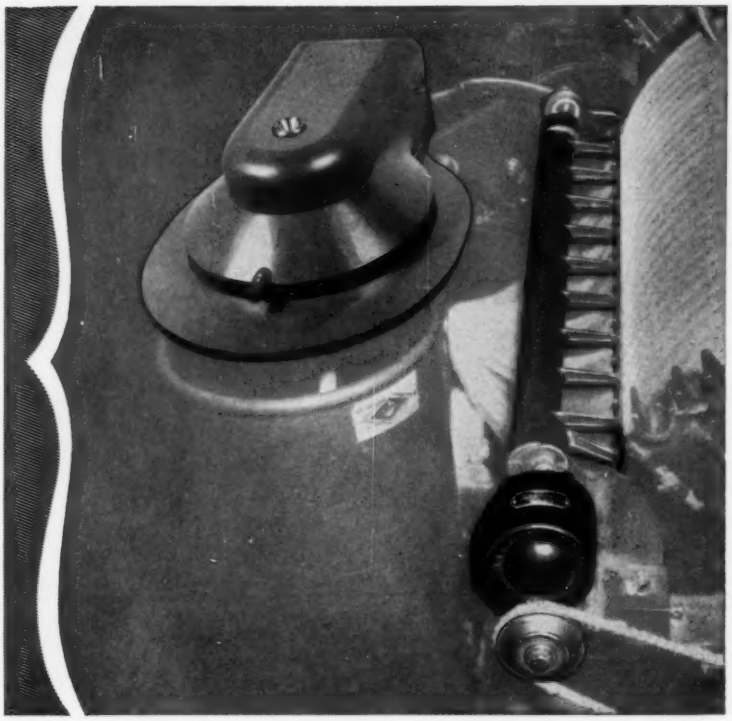
F. C. Huyck & Sons' newly created post of vice-president for purchasing is held by **George L. Brown,** who joined the company in 1920, and was

Mr. Brown

director of purchases prior to his recent promotion. All American divisions of the company are included in the new assignment.

Danville Yarn Mills, Bon Air, Ala., recently announced several changes in supervisory personnel. **Huey T. Green** is now overseer of the carding department, succeeding **L. L. Lee** who retired after 41 years with the company. **Clyde Roberson** succeeds the late Jim L. Holmes as overseer of the spinning department. **Henry Lytton** is now foreman in charge of the second shift spinning and **Cecil Lipsey** is assistant. **Raymond Dennis** is foreman of the second shift carding. **C. L. Hall,** general manager, has also been named vice-president in charge of operations.

Two plant superintendents in the Deering-Milliken group were recently elevated to the position of plant manager. They are **C. E. Anderson** of Excelsior Mills in Union, S. C., and



SOUTHERN STATES NOW OFFERS A FOUR-WAY COMBINATION TO BETTER CARDING OPERATIONS

No mill need put up with hot, leaky, rattling comb boxes, hard-to-align comb blades with distorted fingers, out-dated off end bearings, or antiquated coilers with small cans. Not when Southern States has a four-way answer to all of those problems and at prices every mill can afford!

One. Ball-bearing, sealed-for-life Comb Boxes that operate smoothly, quietly and never run hot.

Two. New Aluminum Comb Stock with solid blade support. Light in weight, yet more rugged than conventional steel. End journals of steel simplify balancing and assure long life. True alignment is easy. No distortion between fingers.

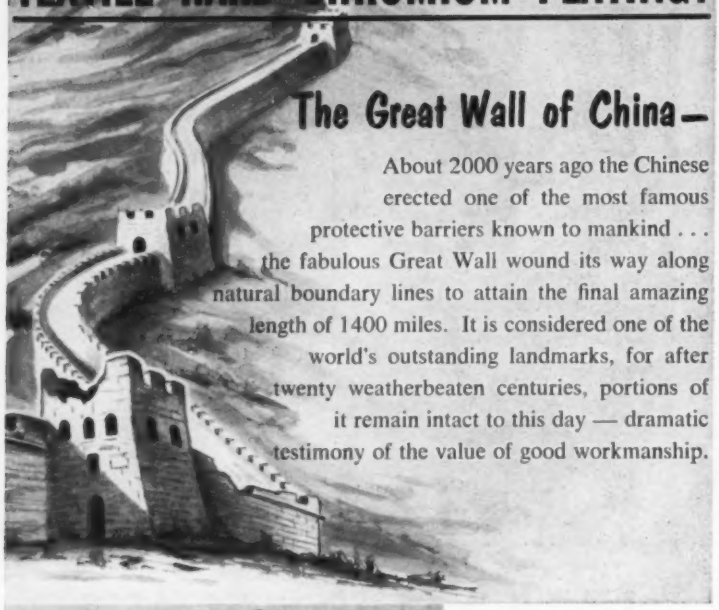
Three. Vibrationless Off End Stand. Pre-lubricated sealed bearing eliminates oiling. Mounts either right or left hand.

Four. Universal Coiler Head for 14- or 15-inch cans for use on any make coiler. Simplified design. Cut tooth gears and oilite bearings throughout.

These Southern States units will bring vastly improved carding operations to your mill and cut operating costs. Facts and figures, based on case histories, will prove how they pay for themselves in record-short time. Let our representative give you the details, or write us direct.

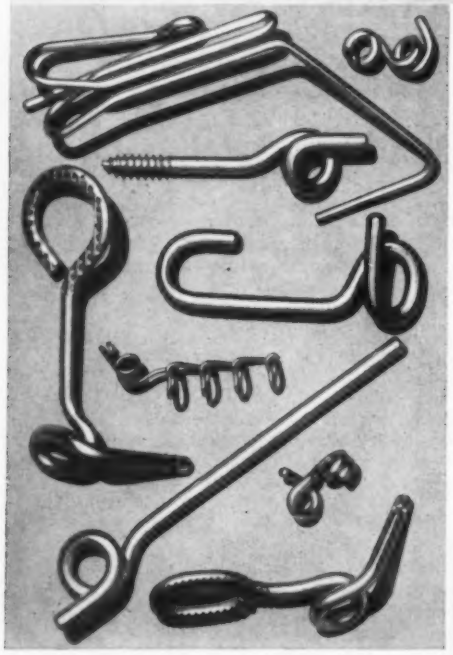
SOUTHERN STATES
EQUIPMENT CORP.
HAMPTON, GEORGIA

WHAT DOES THE GREAT WALL OF CHINA HAVE TO DO WITH . . . TEXTILE HARD CHROMIUM PLATING?



The Great Wall of China—

About 2000 years ago the Chinese erected one of the most famous protective barriers known to mankind . . . the fabulous Great Wall wound its way along natural boundary lines to attain the final amazing length of 1400 miles. It is considered one of the world's outstanding landmarks, for after twenty weatherbeaten centuries, portions of it remain intact to this day — dramatic testimony of the value of good workmanship.



WE, TOO, pride ourselves in the workmanship that goes into our product. WALHARD Chromium Plating will give your parts longer-lasting protection — save you money in maintenance and down-time costs.

You are paying for both *quality* and *service* regardless of what you are getting. It costs no more to have the very best hard chromium plating—it will last longer and save you money.

Be sure you are getting quality. It costs no more and lasts longer.

Walhard

The leading name in textile hard chromium plating

WALTON and LONSBURY

71 NORTH AVENUE — ATTLEBORO, MASSACHUSETTS

Personal NOTES ABOUT MEN YOU KNOW

S. J. Craig, Jr., of Hatch Hill Corp., Columbus, N. C.

Edward J. Dooskin has been placed in charge of manufacturing for the Texstar Non-Woven Fabric Division of the Star Woolen Co., Cohoes, N. Y. Mr. Dooskin came to Star a short time ago from the Boston Fibre Corp. of Everett, Mass., where he was plant manager.

John F. Eastman, formerly superintendent of Bates Mfg. Co.'s Androscoggin Division, Lewiston, Maine, has been elevated to plant manager.

Andrew Fedun, formerly a third hand, is now second hand of carding in the #4 Mill of American Thread Co., Willimantic, Conn.

W. F. Flannigan, vice-president in charge of the Anniston, Ala., division of Flagg-Utica Corp., has assumed the duties of plant manager to fill the vacancy left by **C. M. Scruton,** who is now a division consultant.

Seymour Gansburg, formerly with Greenwich Printing & Dyeing Co., recently joined United Merchants & Manufacturers, Inc. His time is divided between the New York headquarters and the finishing plant at Glasgo, Conn.

William Gellin, a New York attorney and certified public accountant, has been elected treasurer of Bates Manufacturing Co. and its wholly owned subsidiary, Bates Fabrics, Inc. He succeeds Fred C. Scribner, Jr., who resigned to become general counsel of the United States Treasury Department.

Lawrence D. Bragg, Jr., assistant general manager of General Tire & Rubber Co.'s Respro division, is succeeded as production manager of the Bolta Products division by **William Murphy.** Before joining Bolta over two years ago, Mr. Murphy was with Goodall-Sanford, Inc., as manager of its plastics division.

T. O. Moore, vice-president and general counsel of P. H. Hanes Knitting Co., Winston-Salem, N. C., has been named chairman of the executive committee. Also named to the

in a HURRY for the *Best* rubber covered roll ?

Stowe-Woodward Rubber Covered Rolls gather no moss in the making. The three plants where they are made are the world's most modern . . . designed to produce more rolls than any other . . . specifically equipped for the most efficient production of textile finishing rolls.

For a special rush order, any of Stowe-Woodward's three plants is your best source. But with all this equipment, the intervals of TIME specified in the formula for your roll are just as important as the required amounts of rubber, sulphur, or any other ingredient. Short cuts which can possibly affect performance do not make "Rubber Rolls with a Reputation" and we don't believe any of you would risk an ounce of performance to gain a day.

Let's put it this way: Nobody can make a GOOD roll any faster than Stowe-Woodward can make the BEST roll . . . and Stowe-Woodward makes no other kind. Isn't that about the best reason in the world for buying Stowe-Woodward rolls?

"RUBBER ROLLS with a REPUTATION"

S-W

STOWE-WOODWARD, Inc.

Craftsmen in rubber rolls

NEENAH, WISCONSIN — NEWTON 64, MASSACHUSETTS — GRIFFIN, GEORGIA

Better Lubrication for Your TEXTILE Machinery

with Automatic

Norgren MICRO-FOG Lubrication

. . . Reduces wear on bearings - gears - chains - slides - ways - cams

Model 30-40-2S
32 Bearing Inch
1/3 pt. Oil Capacity

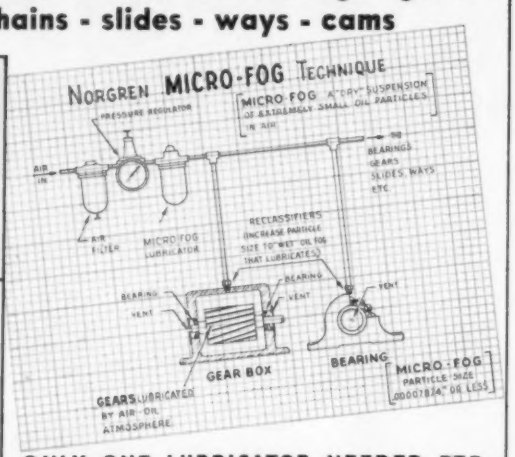
Model 30-41-2S
32 Bearing Inch
½ pt. Oil Capacity

Series S3406
32, 200, 300 Bearing Inch
1 qt. Oil Capacity

Series X3400
32, 200, 300 Bearing Inch
1¾ gal. Oil Capacity

Series Y3400
32, 200, 300 Bearing Inch
4½ gal. Oil Capacity

Model 33AF-16
1000 Bearing Inch
2 gal. Oil Capacity


NORGREN MICRO-FOG TECHNIQUE
MICRO-FOG A "DRY" SUSPENSION OF EXTREMELY SMALL OIL PARTICLES IN AIR
PRESSURE REGULATOR
AIR IN
AIR FILTER
MICRO-FOG LUBRICATOR
RECLASSIFIERS (INCREASE PARTICLE SIZE TO "JUST" OIL FOG THAT LUBRICATES)
TO BEARINGS GEARS SLIDES WAYS ETC.
BEARING VENT
GEAR BOX
BEARING
MICRO-FOG PARTICLE SIZE .00007874" OR LESS
GEARS LUBRICATED BY AIR-OIL ATMOSPHERE

ONLY ONE LUBRICATOR NEEDED PER MACHINE Norgren MICRO-FOG can be uniformly distributed through a complex piping system to multiple lubrication points. One lubricator can completely lubricate all parts of a machine. Norgren has a wide assortment of lubricators with maximum capacities up to 1000 bearing inches.

BETTER LUBRICATION Norgren MICRO-FOG automatically supplies just the right amount of oil for lubricating machine components — no more, no less.

PROTECTION FROM LINT The slight air pressure in bearing or gear housings prevents entry of lint or foreign material.

MINIMUM USE OF AIR The advanced design of Norgren MICRO-FOG Lubricators makes possible complete textile machine lubrication with a minimum of air consumption.

PRECISE CONTROL OF LUBRICATION The delivery of Norgren MICRO-FOG to machine parts is precisely controlled. MICRO-FOG is delivered at a uniform rate regardless of the supply of oil in the reservoir.

LOWER BEARING TEMPERATURES Air borne Norgren MICRO-FOG maintains a lower operating temperature for textile machine parts —reducing wear, improving performance, increasing machine life.

VISIBLE OIL FLOW 360° visibility of oil flow simplifies adjustment of oil feed rate, and provides visual assurance that the lubricator is operating.

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Personal NOTES ABOUT MEN YOU KNOW

committee were **W. Walker Cantrell,** vice-president in charge of manufacturing and a director; and **Thomas F. Southgate,** who was in addition elected vice-president and made a director. **P. H. Hanes, Sr.,** who formerly served as chairman of the executive committee, continues as chairman of the board.

Shorty Goldstein, formerly manager of Burlington (N. J.) Fabric Mills, Inc., is now manager of American Velour Mills, Inc., Bound Brook, N. J.

James Gould, formerly with Newport Finishing Corp., is now plant manager of Stevens Finishing Co., Fall River, Mass.

Burlington Industries recently announced that **William H. Burbury** has joined Mooresville (N. C.) Mills in a styling and fabric development

Mr. Burbury

capacity at the 1430 Broadway, New York City, sales headquarters. * * * Now serving as assistant to Arthur Burnet, manufacturing executive at Burlington's offices in Greensboro, N. C., is **William L. Johnson, Jr.,** who is in charge of the company's rayon spinning operations. Mr. Johnson has been replaced at the Oxford, N. C., plant by **William D. Holt,** acting superintendent.

Secretary of Labor James P. Mitchell appointed **Carl R. Harris,** vice-president of Erwin Mills, Inc., Durham, N. C., to the advisory committee on young operatives of the Bureau of Labor Standards. In announcing the appointment Secretary Mitchell said, "An immediate problem which will come before the committee is the employment difficulties that large numbers of school dropouts

Many washings old and still wrinkle resistant thanks to RHONITE R-1

Washdays have come and gone, yet this dress sheds wrinkles as easily as ever. But that's the pleasant experience you expect with RHONITE R-1 finishes. RHONITE R-1, a modified urea formaldehyde resin, is a monomeric product of such small molecular size that it penetrates and reacts inside the fibers. That's why this dress still needs only a touch of the iron to look its best.

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Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

Personal NOTES ABOUT MEN YOU KNOW

have. The Senate Subcommittee to Investigate Juvenile Delinquency in its recent recommendations on youth employment, has pointed up the need for concerted action to see that young people have opportunities for employment with appropriate supervision and safeguards."

Nelson N. Harte, formerly a vice-president and director of Barnes Textile Associates, Inc., Spartanburg, S. C., has resigned as plant manager of Trenton (Tenn.) Mills, Inc.

National vice-president for the fifth district recently formed by the National Association of Purchasing Agents is **Jack T. Holt,** director of purchases for Erwin Mills, Durham, N. C.

Vincent A. Johnson has succeeded William H. Briggs, Jr., as chief of the statistics division of the National Association of Wool Manufacturers. Mr. Johnson was formerly office manager of the New York sales office of Worumbo Manufacturing Co.

Oscar Kelehear, Jr., was recently appointed personnel manager of Clarksville (Ga.) Mill. George Jarrard, who formerly held that position, has been assigned to other duties at the mill.

As the result of recent promotions at Laurens (S. C.) Mills, **Jack W. Armstrong** is now plant superintendent; **A. T. Wilbanks** is assistant to the manager as well as being technical superintendent; **C. G. Bishop** is assistant superintendent with responsibility for weaving and yarn preparation; **G. M. Batlin** is overseer of spinning; and **J. H. Mauldin** is overseer of all yarn preparation.

John H. Marshall has assumed the duties of director of labor relations for Rock Hill (S. C.) Printing & Finishing Co.

Dexie M. H. Mills is now manager of the Dalton, Ga., operation of E. T. Barwick Mills.

G. Ray Jeffcoat has been promoted from engineer to assistant superintendent of the Opp (Ala.) Cotton Mills, Inc., and Micolas Cotton Mills, Inc. **Taylor Benton,** formerly master mechanic at both mills, has been named engineer.

The Charlotte, N. C., alumni chapter of Phi Psi elected **G. R. Turner** of E. I. du Pont de Nemours & Co. to succeed **Steve Hawes** of Johnson Chemical Co. as president. **Bill Barnhardt** of Barnhardt Elastic Corp. is vice-president, and **Steve Whittier** of Saco-Lowell is secretary-treasurer.

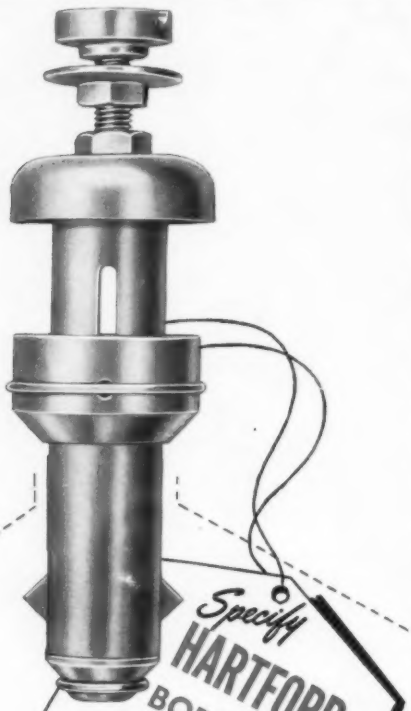
New assistant to Ben R. Rudisill, president of Carlton Yarn Mills, Inc., Cherryville, N. C., is **Jack H. Scott,** who was formerly superintendent of Durham (N. C.) Hosiery Mills' No. 6 plant and manager of the Durham Spinning Mills.

Edward Steipstra is now overseer of finishing at Stafford Printers, Stafford Springs, Conn. He was formerly with Modern Central Dyers & Finishers, Paterson, N. J.

Percival Theel, director of research at the Philadelphia Textile Institute, has been named chairman emeritus

HMS

LOW COST OPPORTUNITY



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100% American Engineered Manufactured and Serviced

Easier and faster creeling. Free-running ball construction. Practically no upkeep. Improves spinning. Reduces cleaning problems. Once you examine it you will always specify the Hartford Bobbin Hanger for your creels. Write today.

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Now... GREAT SAVINGS IN UF RESIN FINISHING

SUBSTITUTE EMBOSET RS FOR UF RESIN IN CREASE RESISTANT AND STABILIZED FINISHES

- Savings in resin finishing cost of 10% - 20%
- Increased permanency of finish
- Increased stabilization
- Approved abrasion resistance
- Elimination of UF resin syrup
- Much easier and quicker mixing
- Less storage and stability problems

Emboset RS LOWERS COSTS

A small amount of Emboset RS replaces 40% to 50% of the paste resin and UF resin syrup usually required for finishing spun rayons, rayon acetate blends and similar fabrics. Substantial savings in labor are also possible in the preparation of finishing mixtures.

Emboset RS IMPROVES FINISHES

Emboset RS finishes are better than those normally obtained with high concentrations of UF Paste. A fuller, more resilient hand is produced with improved shrinkage control, increased abrasion resistance and greater crease recovery.

Write, phone or wire our nearest office for complete technical data. A mill run will gladly be arranged at your convenience.

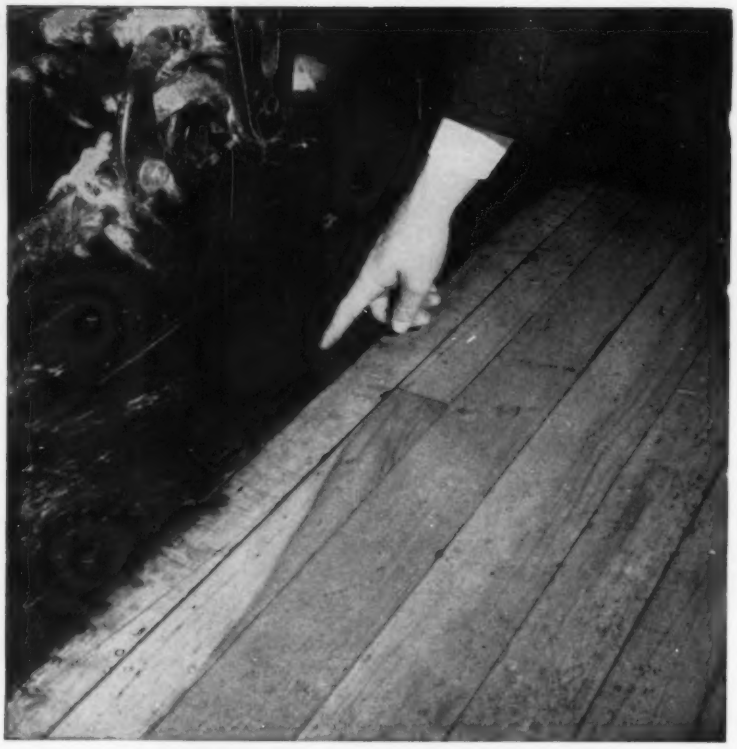
Emboset RESINS

Emboset RS is another in the series of Emboset Resins developed by Metro-Atlantic, Inc. for the textile finishing industry.

METRO-ATLANTIC, INC.

CHEMICALS, DYES AND INTERMEDIATES

Manufacturing Plant and Main Offices — Centredale 11, R. I.
Offices and Warehouses: Greenville, S. C., Fairlawn, N. J.
Canadian Branch: Granby, Quebec
Imported Dyestuff Specialties: Farbwerke Hoechst AG, W. Germany



Tennant shows 127-year-old EXETER MANUFACTURING CO.

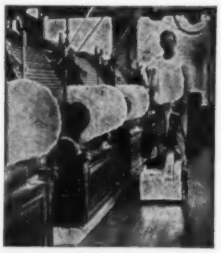
how to make floors TWICE as bright—at ½ the cost

Here, in America's oldest cotton mill (in continuous use since 1827), the TENNANT System works its modern magic on the famous floors in Exeter, N.H.

You see the results above. The *tennantized* area (right) is easily twice as bright as before. Yet mills tell us it costs about 50% less to get such results *today* than it did just 5 years ago.

Here's why. Improved Tennant techniques now make floors far brighter, more dirt-resistant. Result: you save 40% to 60% in manhours, buff only 1/5 to 1/10 as often as before, and get 4 times longer average life from newly developed floor seals.

Write today; ask for estimate of NEW savings now possible in your mill.



VERY LITTLE BUFFING is needed today to keep Exeter's historic floors bright. Mill was built shortly after War of 1812.

TENNANT
ESTABLISHED 1870

G. H. TENNANT CO.
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Minneapolis 11, Minn.

FLOOR MAINTENANCE SYSTEM

Personal NOTES ABOUT MEN YOU KNOW

of the Philadelphia Section of the American Association of Textile Chemists and Colorists. At special ceremonies Thomas H. Hart of Hart Products Corp., chairman of the section, presented an engraved gavel to Professor Theel, who has held every office in the section.

Edgar Smith, formerly general superintendent of the Wanskuck Co., Providence, R. I., is now resident manager of the Maine Spinning Co., Skowhegan, Maine, a subsidiary of Ames Textile Corp. He replaces **Donald Gordon,** who was transferred back to the Lowell, Mass., headquarters.

Harry L. Sain, manager of Hazelhurst (Ga.) Mills, has been elected a

Mr. Sain

vice-president of the parent company, Patchogue-Plymouth Mills Corp.

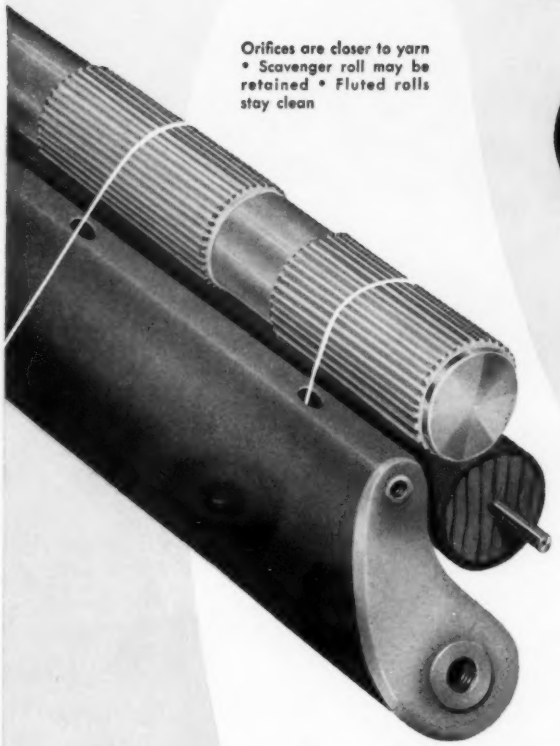
Recently elected vice-president in charge of production for all of The Abney Mills units was **Fred M. Wiley,** who had been assistant vice-president since June of last year. Prior to that Mr. Wiley was general manager of the Grendel and Panola plants in Greenwood, S. C., and the Poinsett Mill in Greenville, S. C.

Robert C. Wilkie has joined Ludlow Manufacturing Co., Needham Heights, Mass., where he is engaged in development and research. Mr. Wilkie came to Ludlow from Pacific Mills at Lawrence, Mass., where he was head of the research department.

Joseph G. Wilmarth has joined Indian Head Mills, Inc., as chief industrial engineer for the plants at Cordova, Ala., Cheraw, S. C., and at

(Continued on page 36)

the AUGUSTA fiber suction system for Spinning*



Orifices are closer to yarn • Scavenger roll may be retained • Fluted rolls stay clean

THE AIRFOIL SHAPE of the Augusta suction nozzles is a great improvement over other suction nozzles in several important respects. Here are some of them.

1. *Orifices are closer to the yarn.* This picks up broken ends when they occur at off-center points on the fluted front rolls and thereby prevents doublings. It also removes more loose fly and produces cleaner yarn.
2. *Greater aerodynamic efficiency.* Pressure drop along the entire system is at a minimum and less horsepower is required for maximum vacuum.
3. *Heavy gauge aluminum construction.* The sturdiest nozzle made—will not distort or crush. Anodized *in any color* for a permanent finish.
4. *Permits the use of a scavenger roll*—if desired. This keeps the entire fluted roll clean—another contribution to better yarn and longer fluted roll life. Scavenger rolls need be cleaned only once a month.

YEARS OF PROVEN DEPENDABILITY Augusta Systems have given years of unmatched service on millions of spindles abroad—against all competitive makes. They have been in operation in several leading American mills and have won immediate and enthusiastic approval. Now the W. D. Dodenhoff Co. offers you the valuable advantages of this up-to-the-minute suction system. Call us today for an engineering survey—without obligation on your part.

Sole Agents: Lendt & Co., 535 Fifth Ave., New York

*U. S. Patents applied for.

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STOCK DYED
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THE NEW
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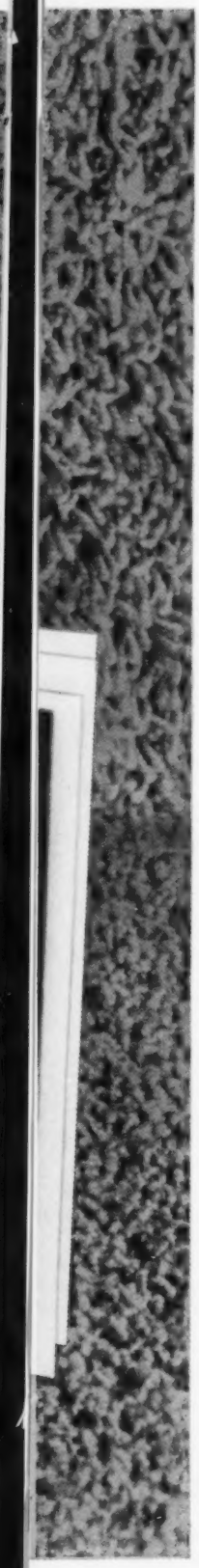

new textures in nylon carpeting now available

IT'S THE NEW LOOK WITH PERMANENT TEXTURE

The New Look is made possible by new special twist-setting techniques developed by IRC for the **New Nylon Staple.** For stock dye, yarn dye or piece dye methods, these techniques give nylon carpeting *more permanent retention of original textures than you get with comparable fabrics made from natural or cellulosic fibers.*

Complete, definitive information on how to achieve these textures is available to you. The study includes samples of many different textures, before and after shampooing. Write or call us today, so that we may present this important development to you personally.

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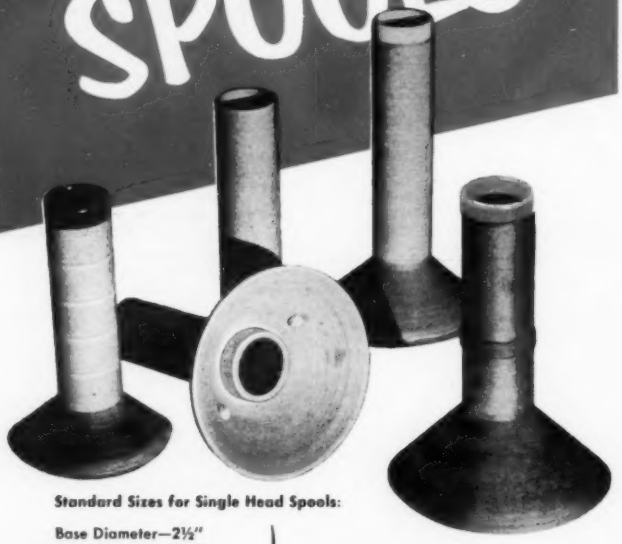
Thrifty

SONOCO SINGLE HEAD SPOOLS



standard of the world!

A SONOCO development widely accepted by the industry for economical packaging of industrial threads. The tapered base permits even and free delivery without "snagging" during "take-off." Choice of smooth, Velvet or Unitex surface; ground ring, deep score or printing on the barrel. Can be supplied with metal ring in base of barrel for increased strength. Colored lacquer tips can be applied where required for identification. Consult your SONOCO sales-engineer or write direct for complete information.

Standard Sizes for Single Head Spools:

Base Diameter—2½"	Barrel Lengths—2⅜"
Base Diameter—2¾"	Barrel Lengths—4¾6"
Base Diameter—3"	Barrel Lengths—5⅜"
Base Diameter—3¼"	
Base Diameter—3½"	
Base Diameter—3¾"	
Base Diameter—4"	

3½" and 4" base spools available with barrel lengths 6⅜" long, also special barrel lengths for all bases. Double head spools can be supplied to meet your specified requirements. Plastic Single Head Spools also available in standard sizes shown above and in a variety of colors.

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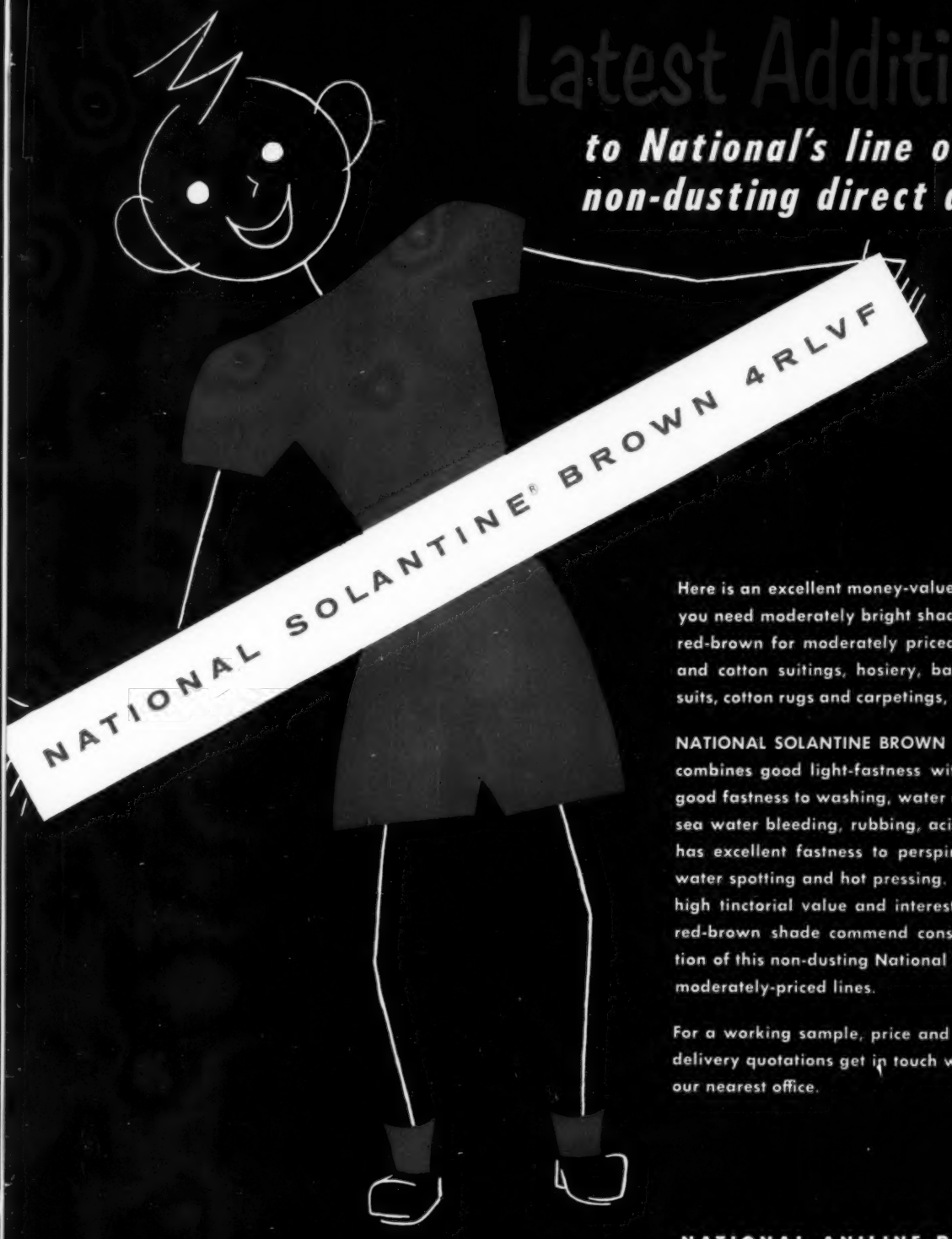

Latest Addition

to National's line of non-dusting direct dyes

Here is an excellent money-value when you need moderately bright shades of red-brown for moderately priced rayon and cotton suitings, hosiery, bathing suits, cotton rugs and carpetings, etc.

NATIONAL SOLANTINE BROWN 4RLVF combines good light-fastness with very good fastness to washing, water and sea water bleeding, rubbing, acids. It has excellent fastness to perspiration, water spotting and hot pressing. Its high tinctorial value and interesting red-brown shade commend consideration of this non-dusting National Dye for moderately-priced lines.

For a working sample, price and delivery quotations get in touch with our nearest office.

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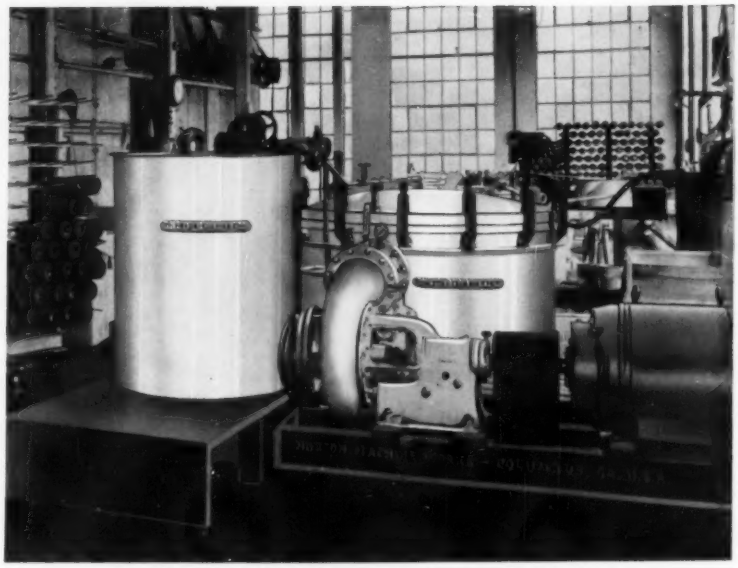
Allied Chemical

MORTON SYSTEM

RAW STOCK AND PACKAGE DYEING MACHINE . . .

This is a jumbo package dyeing machine, with modifications for dyeing raw stock and tops. Excellent for large lots and multiple uses.



Combination Stock, Tops and Package Dyeing Machine

BIG MACHINES FOR BIG PRODUCTION 5000 POUND LOTS

Jumbo Packages . . . or Tops

SYNTHETICS AND NATURAL FIBERS AND YARNS.

NO BASEMENT REQUIRED.

LARGE FLOW OF LIQUOR.

HEAVY DUTY ENGINEERED.

BUILT TO FIT YOUR PRODUCTION.

— ANY SIZE LOTS —

Manufactured by:

MORTON MACHINE WORKS, Inc.

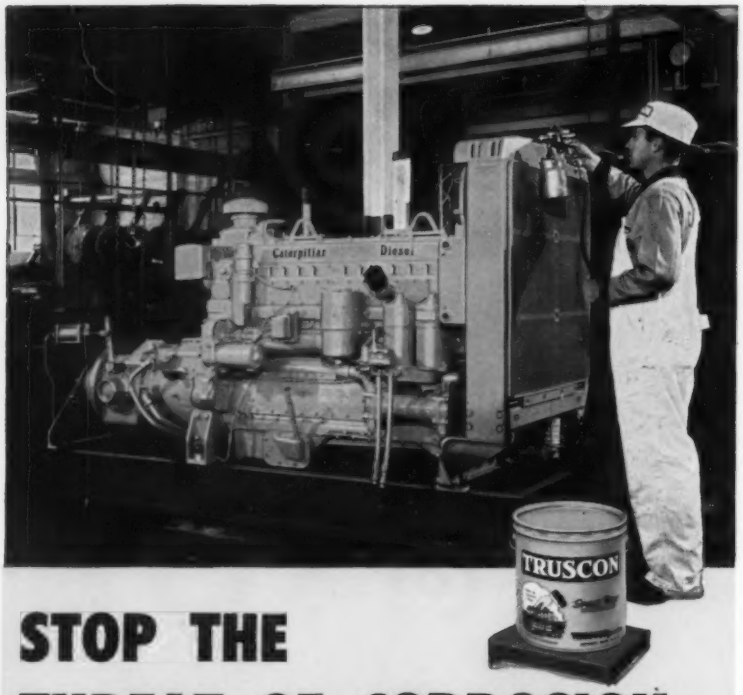
COLUMBUS, GEORGIA, U. S. A.

Manufacturers of the MORTON SYSTEM Machinery for Dyeing and Bleaching of:

BEAMS -:- PACKAGES -:- STOCK -:- PIECE -:- TOPS

VALVES — PUMPS — BEAM AND PACKAGE EXTRACTORS AND DRYERS — DYE BEAMS, ALL MAKES AND DESIGNS — DYE TUBES — DYE SPINDLES — TUBE SPACERS — CUSTOM BUILT TANKS TO CUSTOMER'S SPECIFICATIONS.

Rieter
"Better Yarns at lower cost with Rieter machinery".
"Rieter, Winterthur (Switzerland) established 1795 builds modern machinery of the highest quality and precision for cotton, wool, worsted, rayon, synthetic fibers and blends thereof insuring a more efficient and economical performance for the manufacturing of high quality yarns."
American Rieter Company, Inc., Arlington, New Jersey.
"Southern representative: Belton C. Plowden Company, Griffin, Georgia" "Canadian representative: Fawcett & Company, Toronto 3, Ontario"
Rieter
1126 A



STOP THE THREAT OF CORROSION WITH TRUSCON "Speed Rex"

Provides Tough, Resistant Paint Film For Metal, Wood And Concrete Surfaces

You can lick the corrosion problems caused by condensation with "Speed Rex" . . . the *toughest* all-purpose coating you can find for machinery, tools, conveyors, benches, guard rails and most other plant equipment.

And "Speed Rex" resists *hard knocks* as well as chemicals and moisture. You paint less often when you standardize on "Speed Rex" because rough, tough physical abuse bounces off the rugged hide of this protective coating.

The reason "Speed Rex" can take so much punishment is Devran . . . an Epoxy Resin that gives paint greater wear-ability and resistance to corrosive chemicals.

It's Alive! It's Devran!

If you were to bounce a solid ball of Devran, or drive it with a golf club, you'd see how "alive" it is. It's this *lively toughness* that enables Speed Rex to bounce back after absorbing the roughest kind of industrial treatment. Get the full details on work-saving Speed Rex from your Truscon Sales Engineer. Or write for literature . . . now!

Maintenance Problem? **TELL IT TO TRUSCON!**

TRUSCON *Laboratories*
Division of Devoe & Raynolds Co., Inc., Detroit 11, Michigan

Personal NOTES ABOUT MEN YOU KNOW

(Continued from page 28)

Spartanburg, S. C., where he has headquarters.

Obituaries

Nelson A. Batchelder, 76, retired general manager of Empire Cotton Division, Woods Mfg. Co., Ltd., Welland, Ontario, Canada.

Elwood I. Beatty, 81, retired textile consultant, Philadelphia, Pa.

Ernest Bromley, 74, retired general agent of Whitman Mills, New Bedford, Mass.

John J. Cooper, 72, textile engineer for Saco-Lowell Shops, Boston, Mass.

Harold Crabtree, 71, president and chairman of the board of Woods Mfg. Co., Ltd., Welland, Ontario, Canada.

Frank C. Flint, president of Knit Goods Specialty Co., Inc., Chicopee Falls, Mass.

George R. Ford, 48, sales engineer for Bentley Knitting Machinery Organization, Inc., Providence, R. I.

Samuel Godfrey, 56, president of Jos. Simpson Sons Ltd., Toronto, Ontario, Canada.

Edward V. Gregson, assistant superintendent of the Sanforized division of Cluett, Peabody & Co., Inc., Troy, N. Y.

Moses W. Haber, 73, chairman of the board of Cashmere Corp. of America and Erie Dyeing & Processing Co., Cleveland, Ohio.

John T. Kirk, 91, formerly manufacturing agent of Nashawena Mill and chairman of the board of trustees of New Bedford Institute of Textiles and Technology.

George Allan Larter, president of Allan Woven Label Co., Inc., Paterson, N. J.

John Naab, 67, professor emeritus of knitting at Philadelphia Textile Institute.

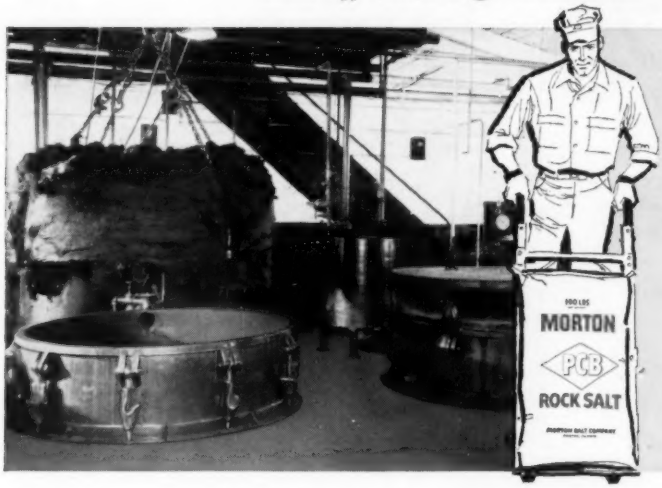
Robert H. Whitehead, 81, Palm Beach, Fla., former owner of Mohawk Hosiery Mills and Burlington Hosiery Mills.

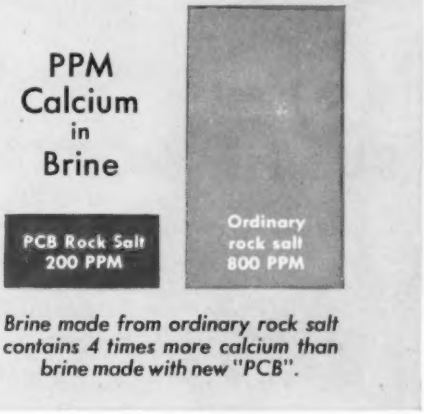
Harry Wilkinson, 74, retired cloth superintendent of Ayer Mills, Lawrence, Mass.

New! Morton "PCB" Rock Salt

for low cost, low calcium brine!

Saves money on sequestering agents! Eliminates streaks and off-shading! Increases color intensity!





Brine made from ordinary rock salt contains 4 times more calcium than brine made with new "PCB".

Morton "PCB" Rock Salt, a patented process for making low calcium brine, combines screened southern rock salt with chemicals that prevent the harmful calcium compounds that occur naturally in rock salt brine from going into solution.

As the chart above shows, "PCB" Rock Salt brine contains *75% less calcium* than brine made with untreated rock salt. (The less than 200 PPM calcium in "PCB" brine is inactive.) What's more, "PCB" can be used in your present rock salt dissolving equipment without additional construction or extra labor.

Available in 100-lb. bags or bulk, "PCB" is specifically recommended when brine is used in dyeing, rawstock, package, beam, beck or jig with either sulphur, direct or naphthol dyes. ("PCB" also can be used effectively in your water softener.)

"PCB" BRINE

● Saves money on sequestering agents ● Improves crock fastness with naphthol dyes ● Increases color intensity where sulphur dyes are used ● Results in softer finishes, more even shades ● Aids in retarding corrosion ● Is far less expensive than brine produced from purified low calcium evaporated salt.

FREE! Let a Morton Brine Engineer take a sample of the calcium content in your water and brine. He'll have it analyzed and tell you how much you can reduce the calcium content by using "PCB" Salt.

MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. TI-5, 120 So. La Salle Street, Chicago 3, Illinois

*Please send me your free booklet on "PCB."*_____
*I would like a Morton Brine Engineer to make a calcium analysis of water and brine in my plant.*_____

Name_____
Title_____
Company_____
Address_____
City_____ State_____

Walton Simmons, Georgia Institute of Technology, Class '40; Chemist and Plant Supt., Southern Sizing Company, 1940, Plant Manager and Vice - President, 1946.

BUT HE WORKS FOR YOU!

If you have a sizing problem in your mill, the logical thing to do is to get a sizing expert to solve it for you.

Put in a collect call to Southern Sizing Company or contact one of our representatives today! We have six men on our payroll whose job it is to help you make your mill run better. All are experienced engineers and all know weaving and slashing inside and out. One or more of these men is located near you.

We're the first to admit they aren't the prettiest guys in the business but we know they're the best when it comes to solving your sizing problems. Superior service and superior size are our two stocks-in-trade.

SSC Sizing and Service Salesmen left to right, C. Russell Gill, Robert E. DeLapp, Jr., Jimmie D. Walker, Robert V. May, B. G. Stumberg, Jr.

SOUTHERN SIZING COMPANY

SUPERIOR SIZE, SUPERIOR SERVICE

East Point, Georgia

PHONE POPLAR 1-8871

SSC

What the TEXTILE MILLS are doing

Austin Knitting Mills, Inc. (formerly Austin Hosiery Mills, Inc.), Albemarle, N. C., has an expansion program in progress to provide facilities for making full-fashioned sweaters. The plant is being enlarged to 30,000 sq ft, and the sweater machines and finishing equipment are scheduled for installation during the next two years.

Underwear manufacturing operations have been shut down at **Appalachian Mills Co.,** 815 Fort Sanders Ave., Knoxville, Tenn., and finished orders are scheduled to be shipped by August. Machinery is being liquidated.

Construction of an addition to **Arel Mills, Inc.'s** plant on Sutherland Ave. in Monroe, N. C., is nearing completion. New machines are being installed to process "Arello," a synthetic fabric used for linings. Personnel is being increased, and production is expected to be fifty per cent greater when the new facilities are in full operation.

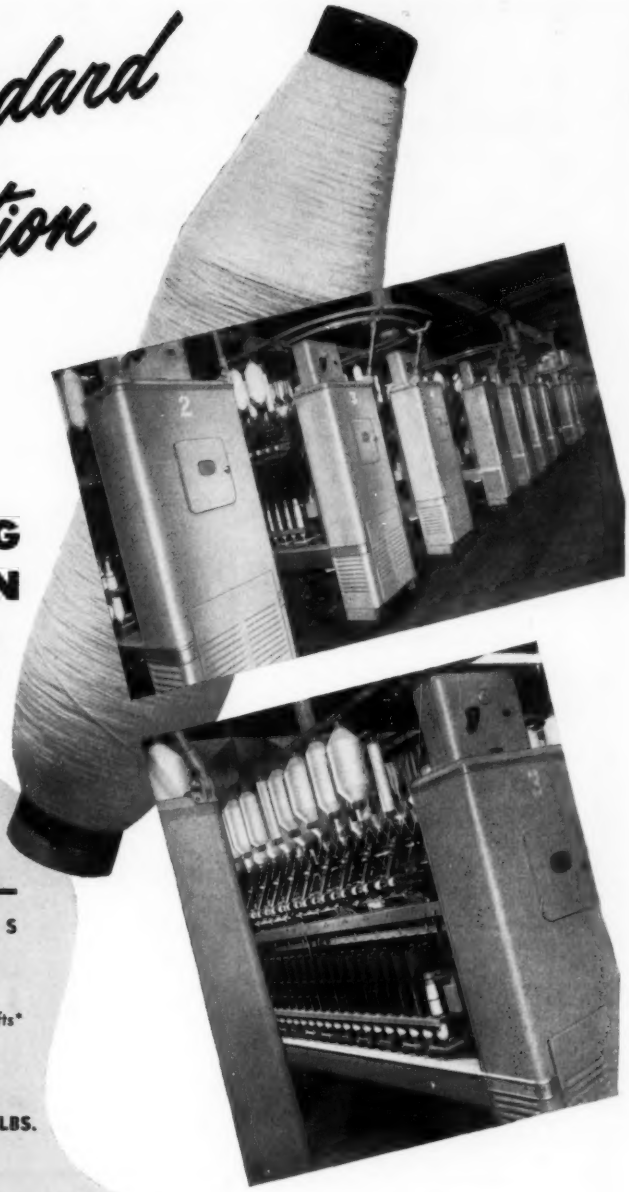
A $100,000 addition to the dye house at **Burkyarns, Inc.,** Valdese, N. C., was completed in March. Capacity has been increased about 50 per cent with the new 8,000 sq ft of floor space.

Production has been increased at **Beaunit Mills, Inc.'s** Fountain Inn, S. C., plant through the addition of part of the tricot machines from the company's Lowell, N. C., mills. Part of the personnel from Lowell have also been transferred to Fountain Inn.

Sixty supervisory employees of **The Abney Mills** were recently entertained at a chicken dinner sponsored by the Courtenay Mills Plant at Newry, S. C. Harold Campbell, plant superintendent, was master of ceremonies. The program featured several talks on the subject of cooperation, and a string band furnished music.

Bates Manufacturing Co. has embarked on a major program of new product diversification to broaden its activities in the home furnishings field. First to be introduced is a full line of bed blankets made of a special

A New Standard of Production



THIS GWALTNEY SPINNING FRAME INSTALLATION OF 34,320 SPINDLES *PRODUCED THE RESULTS SHOWN BELOW —*

MILL PRODUCTION —

160,000 LBS. IN 120 HOURS USING:

7 spinners per shift
5 creelers per shift
and a total of 58 auxiliary operatives on 3 shifts*

ACTUAL MAN HOURS . . .
Spinning Room, for 120 hours — 3760

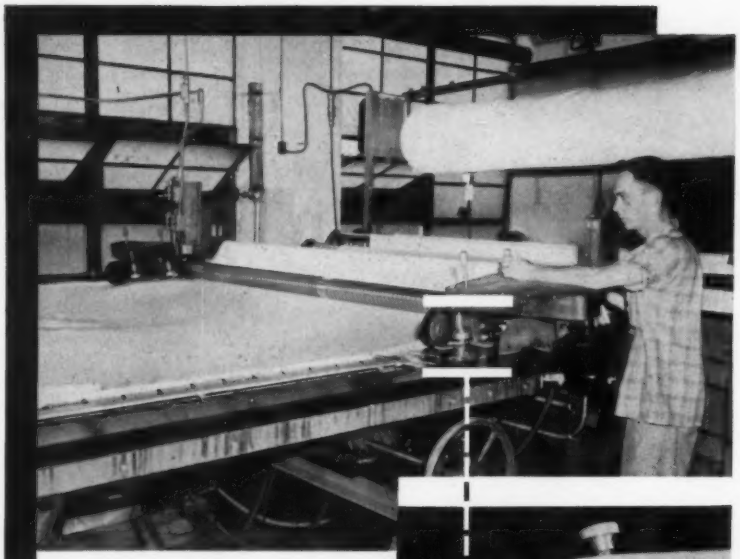
PRODUCTION PER MAN HOUR — 42.55 LBS.
Warp counts from 8½'s to 30's
Filling . . . . 7½'s to 26's
Calculated average count . 21's

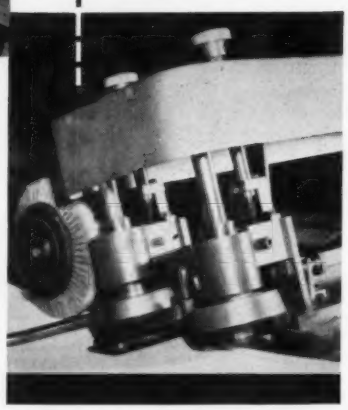
Gwaltney Spinning Frames have demonstrated beyond any doubt their ability to produce yarns that are stronger, far more even, and of higher grade than the same count yarn produced from the same stock with conventional spinning — and this improved quality has been produced at considerably lower operating costs and resultant higher profit.

Mills interested in matching these standards should have our sales engineer prepare a "Forecast For Savings" based on a Saco-Lowellizing program.

* Auxiliary operatives include section men, overhaulers, roll pickers, traveler changers, doffers and sweepers.

SACO-LOWELL
60 BATTERYMARCH STREET, BOSTON 10, MASS.
Shops at BIDDEFORD and SACO, MAINE, and SANFORD, N. C.
SALES OFFICES: CHARLOTTE • GREENSBORO • GREENVILLE • ATLANTA





How KINGSBORO MILLS

increased production 100%
improved quality
reduced costs with three

ASKANIA CLOTH GUIDE CONTROLS

Increased output from 20-40 yards per minute... a neater more even job than could ever be obtained by custom processing... the release of *one man per frame* for other, more productive work... drastically curtailed maintenance expense—all are the specific results made possible by three automatic ASKANIA Cloth Guide Controls applied to Kingsboro Mills tenter frames.

HOW IT WORKS

Accuracy and dependability are extremely important. ASKANIA's twin-jet positioners automatically guide the pins or clips so that they engage the cloth just inside the selvage edge as it enters the tenter frame. ASKANIA'S Cloth Guide Control is non-contact. A *breath of air* is the only contact between the control and the web. It has proven to be the most accurate of all cloth guide controls.

WHERE IT'S USED

The Cloth Guide Control can be used in *any* mill, operating at *any* rate of speed and in the production of *any* type or thickness of material. If you SLIT, POSITION, WIND, TENTER OR EXAMINE, you can save time and earn money by using this 100% automatic watchdog in your mill. There are only three basic units involved in the control operation. The Sensing Nozzle, The Jet-Pipe Regulator and The Hydraulic Work Cylinder. *Your own equipment is the only limit to the amount of run-out which can be corrected.*

CONTINUOUS CONTROL
HIGH SPEED OPERATION
NON-CONTACT
HYDRAULIC OPERATION
MOST ACCURATE CONTROL
FOR ALL CLOTH HANDLING
WIDE RANGE

Send today for Bulletin No. 161 which explains the purpose, the function and operation of the ASKANIA CLOTH GUIDE CONTROL.

CONTROLS FOR INDUSTRY

ASKANIA REGULATOR COMPANY

260 East Ontario Street, Chicago, Illinois

HYDRAULIC, ELECTRONIC CONTROLS & SERVOS, GENERAL SYSTEMS ENGINEERING & COMPUTER SERVICE, VALVE ACTUATORS & CYLINDERS

A Subsidiary of General Precision Equipment Corporation

What the TEXTILE MILLS are doing

rayon-nylon blended fabric. The blankets have distinctive features in size and colorings and retail prices are sharply competitive. Bates is also participating in its first white sales program this month, with the broadening of operations in its sheet and bedspread divisions.

Production has started at the **Bobbie Sportswear, Ltd., Inc.,** sweater knitting plant at Marion, S. C. The firm was recently incorporated by Cary C. Boshamer, president, and Herbert S. Levy, treasurer, who hold the same offices in Herbert Mills Co., Inc., in Marion. The new plant occupies a 28,000 sq ft building, has about 165 employees, and is equipped to produce a minimum of 24,000 dozen sweaters a year for juveniles, boys, and misses.

Capacity for peroxide bleaching of tapes, ribbons, and skein yarn at **Caledonian Dye Works** has been doubled by the installation of two 1200-lb stainless steel dyeing machines.

At Paterson, N. J., **Cambridge Textile Processors** have been incorporated with the same officers and management as Haledon (N. J.) Textile Processors, Inc. Equipment ordered for the plant at 50 First Ave. includes two 240-ft long multi-color roller printing ranges, and two other print machines designed especially for the plant's flocking, stencil, lacquer, and Duco printing operations.

The Cartex Division of **Carlton Yarn Mills, Inc.,** Salisbury, N. C., is now offering a complete range in the major synthetics, as the result of its recently added spun nylon operation.

Chicopee Manufacturing Corp. has acquired the fabrics division of The Visking Corp., which includes a 140,000 sq ft plant and 30 acres of land in North Little Rock, Ark., where approximately 200 persons are employed.

Color-Knit Dyeing Corp., 829 Newark Ave., Elizabeth, N. J., is a new organization established to piece dye synthetic and blend yarn sweaters and knitted fabrics. The company is headed by Edward Szlosberg and

Two important names in the Textile Industry . . .

BRANSON and LASSITER . . .

unite to bring you

NEW, GLITTERING

FAIRTEX® YARNS

Metallic Yarns
Supported Metallic Yarns
Mylar* Metallic Yarns

Whether you weave, knit or crochet . . . whether you work in cotton, wool, silk, linen or the synthetics . . . give your fabrics greater eye-appeal and buy-appeal with new, glittering FAIRTEX Yarns.

These new FAIRTEX Yarns are backed by many years of experience and fifteen months of research and development. To Branson Company's comprehensive knowledge of weaving and knitting has been added Lassiter Corporation's notable proficiency in the plastics field.

FAIRTEX Metallics are non-tarnishing, highly color-fast and heat-resistant . . . they may be fabricated with ease on practically any type of machine.

FAIRTEX Metallic, Supported Metallic and the new Mylar* Metallic Yarns are available now in a wide range of sparkling colors to meet the designers' every requirement.

*Registered Trademark for Dupont's Polyester Film.

FAIRTEX® YARNS

Metallic • Supported Metallic • Mylar* Metallic

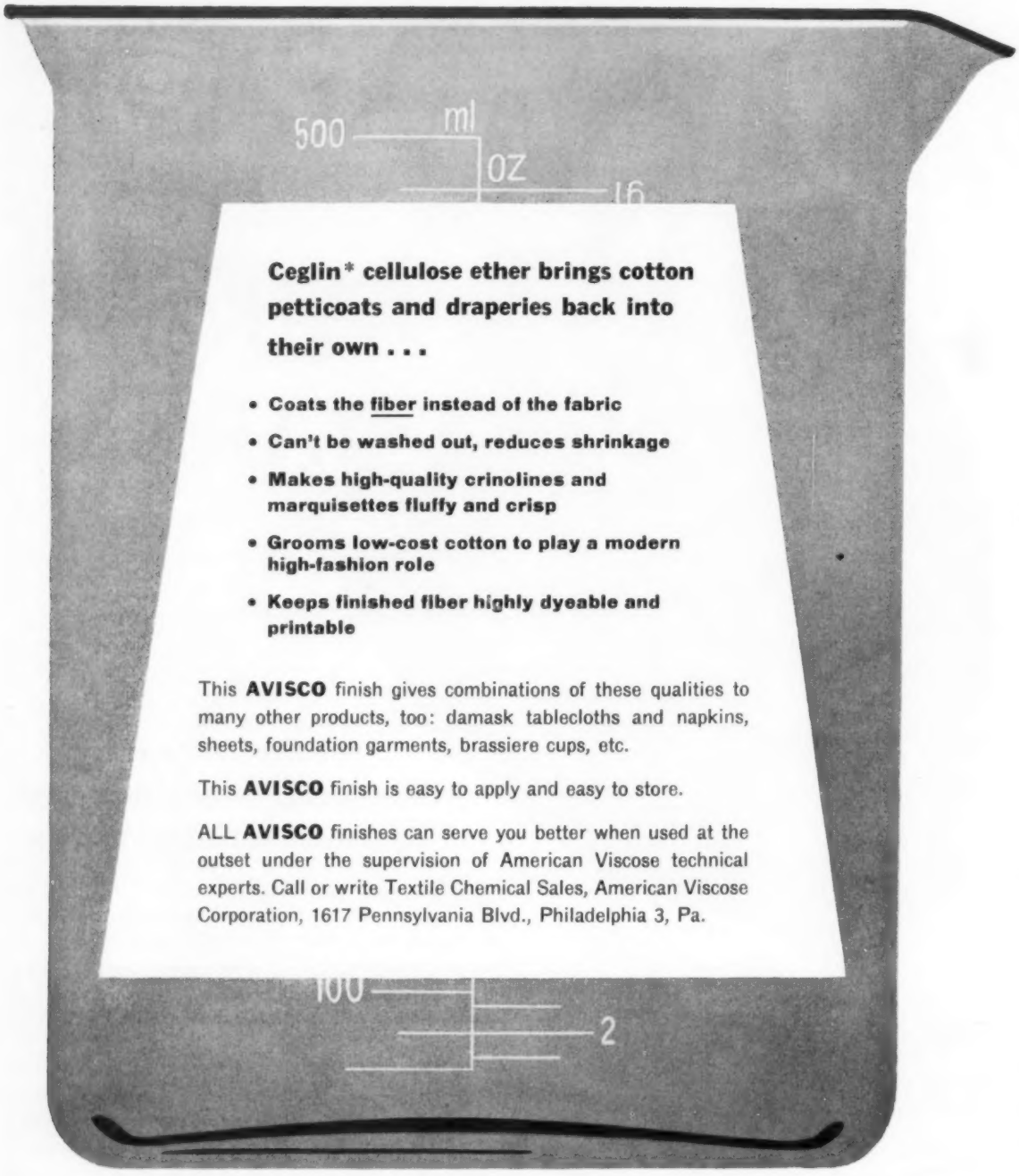
Fairtex Corporation
Charlotte, N. C.

CHARLOTTE
Lanier Branson, Jr. and J. E. MacDougall, Jr.
1808 Liberty Life Bldg.

CHICAGO Napier & Harshman
3555 Peterson Ave.

NEW YORK Robert Napier
51 E. 42nd St.

AVISCO* finish "fines



Ceglin* cellulose ether brings cotton petticoats and draperies back into their own . . .

- **Coats the fiber instead of the fabric**
- **Can't be washed out, reduces shrinkage**
- **Makes high-quality crinolines and marquisettes fluffy and crisp**
- **Grooms low-cost cotton to play a modern high-fashion role**
- **Keeps finished fiber highly dyeable and printable**

This **AVISCO** finish gives combinations of these qualities to many other products, too: damask tablecloths and napkins, sheets, foundation garments, brassiere cups, etc.

This **AVISCO** finish is easy to apply and easy to store.

ALL **AVISCO** finishes can serve you better when used at the outset under the supervision of American Viscose technical experts. Call or write Textile Chemical Sales, American Viscose Corporation, 1617 Pennsylvania Blvd., Philadelphia 3, Pa.

GROW WITH AVISCO*

and sheers" cotton for keeps

*Avisco and Ceglin are trademarks of the American Viscose Corp.

TEXTILE CHEMICALS

JENKINS' METLKOR®
BETTER BRUSHES FOR BETTER COTTONS

BRUSHING MACHINE

The widening uses and demands for cotton over past decades has created a number of new problems in production and finishing. M. W. Jenkins' Sons has designed and developed a special line of brushes to solve these problems. The results of this experience, research and development, in cooperation with leading textile mills and machinery manufacturers are available today in the highly efficient patented Jenkins' METLKOR brush.

This brush, with a permanent metal core, can be set with any bristle and can be rebristled when worn. Bound in place with corrosion-resistant metal and sealed in with solvent-proof plastic cement, the Jenkins' METLKOR brush is moisture-proof, acid- and alkali-resistant, will not sag, split or get out of alignment, is true balanced.

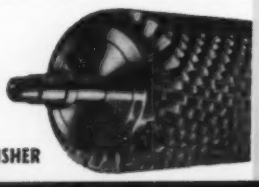
METLKOR brushes outlast other kinds of brushes and, in terms of service, are the most economical.

Whether you have a standard or special brush problem, Jenkins will manufacture to your specifications and needs, the right brush for the right job.

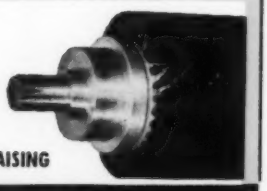
LIFEWOOD® *for wood core brushes and lags.*

OTHER METLKOR BRUSHES FOR COTTONS:

CARDING • SINGEING • BRUSHING PRIOR TO PRINTING • PRINTING BLANKET SCRUBBER, WASHER AND DRIER • BACK GRAY SCRUBBER • SOAPING • FURNISHER BRUSH CLEANING



FURNISHER



SHEAR RAISING

M. W. JENKINS' SONS, INC.

Over Three-Quarters Century of Pioneering Brushes for Industry.

Cedar Grove, Essex County, New Jersey

TELEPHONE Verona 8-5327

What the TEXTILE MILLS are doing

Joseph Weber. Mr. Szlosberg was previously with Sandoz Chemical Works, Inc.

Participating in a recent series of workshop sessions on human relations were approximately 150 supervisors from **Cone Mills Corp.'s** Proximity and White Oak denim plants and other mills. The course was held at the Proximity YMCA in Greensboro, N. C., under the direction of Dr. J. L. Rosenstein. Responsibilities of the supervisor, human nature, securing suggestions, communications, and integrity in leadership were among the subjects discussed.

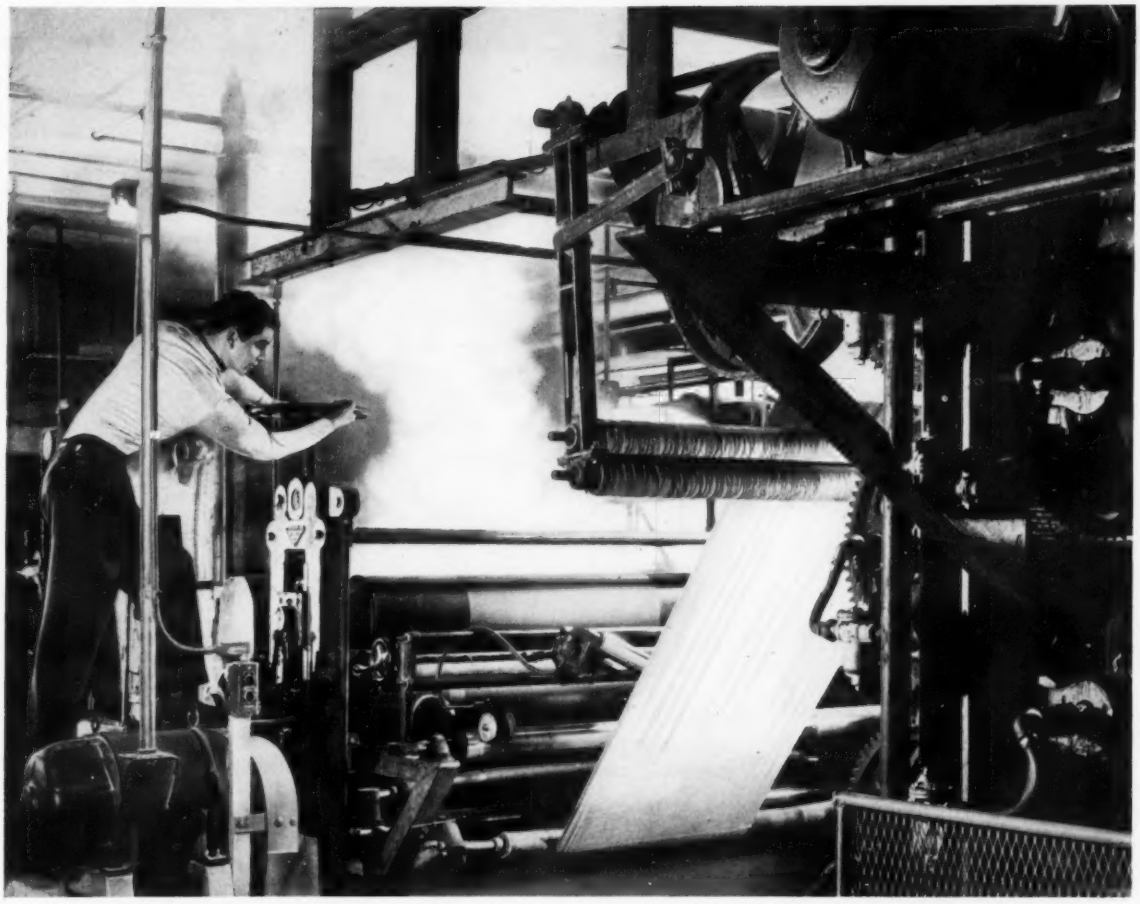
Award winners of the Cotton Manufacturers Association of Georgia's seventh annual textile safety contest included the following: **Aldora Mills, Hartwell Mills, U. S. Rubber Co.'s Reid Mill, Dundee Mills, Inc., Crompton-Highland Mills, Inc., Callaway Mills Co.'s Elm City Plant, Coats & Clark, Inc., Martha Mills Division of B. F. Goodrich Co.,** and **Exposition Cotton Mills Co.** Fifty-five Georgia textile plants had accident frequency records lower than the national average for the textile manufacturing industry.

Initial delivery of 24 warp spinning frames for **Dacotah Cotton Mills, Inc.,** Lexington, N. C., is scheduled for May, with installation to be complete by August, replacing existing equipment. Changeovers for 20 filling frames have also been purchased.

Dan River Mills, Inc., has a plan in progress to provide protection to employees and property in case of emergencies such as hurricanes, floods, fires, and explosions. Hundreds of employees have already received first aid instruction from the American Red Cross, special guard and police training has been given, and other instruction is being offered in coordination with civil defense authorities.

Daniel Hosiery Mills is a new corporation which has started operation in the building formerly occupied by Wisteria Hosiery Mills in Lincolnton, N. C. The plant will have an ultimate capacity of 60 machines for the production of women's seamless

For economy in your finishing operation use a GLOBE® PEARL STARCH



Operators choose Globe Pearl Starches for the economy that results from extra coverage.

Whether for the thick starch paste necessary in back filling, the carrier in printing or the starch for mangle work, there is a Globe Starch just right for the work.

These thick-boiling starches provide the extra coverage that means more economical production. Pastes and sizes made from Globe Pearl resist the effects of pumping and cooking without losing viscosity.

Consistently reliable, Globe Pearl Starches are uniform. Their ready availability have made them the favorite choice of many mills.

Ask the man from Corn Products. Ready to assist you in any way, he has at his disposal the most complete laboratory and technical facilities in the industry. The man from Corn Products can also provide engineering service for the installation of bulk-handling equipment. Write or phone for information, there is no obligation.

1906 • **50th ANNIVERSARY** • 1956
CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York 4, N. Y.

Corn Products makes these famous starches for the textile industry—
Eagle • Foxhead • Globe • Hercules • Ten-O-Film • Globe Dextrines & Gums

REPUTATION

Is Mighty
Important
To The Twenty
Game Winners

One of a baseball pitcher's best stocks in trade is a fearsome reputation among batsmen on the other teams in the league. It's important that he maintain it!

It's also important to choose the electrical contractor with the best reputation to handle electrical projects in your mill. J. M. Clayton Co. has the reputation and the know-how . . . you'll hear the name mentioned wherever quality electrical contracting is being discussed.

J. M. CLAYTON CO. 1906 50 1956 YEARS

J. M. CLAYTON CO.

CONTRACTING ELECTRICAL ENGINEERS

ATLANTA, GEORGIA

What the TEXTILE MILLS are doing

hosiery to be sold in the grey. Dan M. Boyd is president.

The current New York City facilities of **Empire State Mills Inc.**, knitter of novelty outerwear and specialist in knitted fleeces, will be moved to a new, one floor, 30,000 square foot building at 22-61 45th Street, Astoria, Long Island. The move is expected to be completed by July. The new mill will include expanded facilities for knitting, splitting, finishing and examining. A feature of the work to be done at the plant will be production of fur-type knitted coatings.

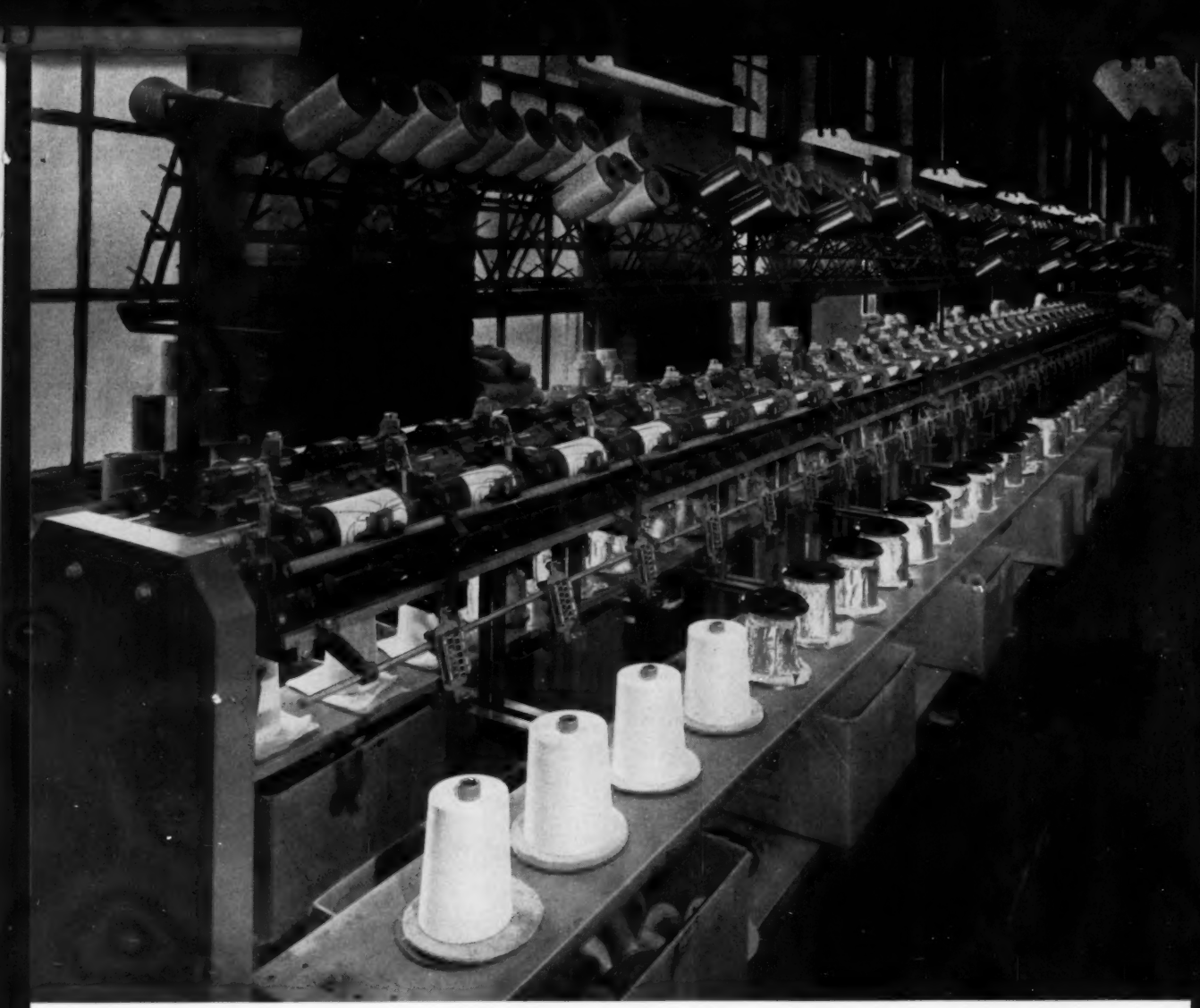
T. W. Church, Jr., executive vice-president and treasurer of **Highland Park Mfg. Co.**, announced the addition of 120 looms at the company's Mill No. 2 in Rock Hill, S. C.

A. D. Juilliard & Co. has purchased the majority of stock of The Virginia Woolen Co., Winchester, Va., including Varel Mills, Inc., at Middleway, W. Va., where finishing is done for the Virginia mill.

Kenosha (Wis.) Full Fashioned Mills, Inc., has transferred the recently purchased equipment of Contour Hosiery Mills to its four-story factory at 2323 Sixtieth St., to increase production of women's hosiery.

LaFrance Industries is now weaving silk at its Anderson, S. C., subsidiary which previously produced nylon automotive fabrics. The silk

(Continued on page 52)



On this Kidde-Sipp Winder-Redraw

SPOOLS NEVER OVERRUN

You get nothing but uniformly full spools — no overruns and no partially filled spools — with the Kidde-Sipp Winder because the instant a spool is full, it's stopped — automatically. And with one hand your operator can doff it and load again in seconds. These advantages combined with self-threading guides and high running speed mean this: one operator can tend more spindles and turn out more poundage on the Kidde-Sipp Winder than on any other machine. For complete information, write us today.

ONE HAND does it, without touching the yarn . . . operator can doff a full spool in a split second, with a flip of the hand . . . and her fingers never even touch the yarn.

TRICOT AND RASCHEL MACHINES • TRICOT WARPERS • HORIZONTAL WARPERS
BEAMERS • CREELS • SLASHERS • WINDER-REDRAWS • TENSOMETERS

Kidde

MANUFACTURING CO., INC. — 42 FARRAND STREET — BLOOMFIELD, NEW JERSEY

SOUTHERN OFFICE — 267 W. MAIN ST., GASTONIA, N. C.

The word KIDDE is the trademark of Walter Kidde & Company, Inc., and its affiliated companies.

CHEMICALS FOR COTTON FROM SOLVAY

CAUSTIC SODA

DESIZING—Removing sizing and external dirt by saturation, steeping, and washing.

PURIFYING—Extraction by either continuous or batch methods of natural impurities found in cotton fiber such as motes, pectins, waxes, and inorganic salts.

MERCERIZING—Improving luster stability, absorbency, and dyeability by saturating with caustic, holding under tension, and washing.

PLISSÉ—Puckering certain areas of woven fabrics by printing with caustic paste to produce seersucker or comparable effect.

SODIUM HYPOCHLORITE BLEACHING—Manufacture of chemical bleach solutions.

HYDROGEN PEROXIDE BLEACHING—Minimizing scale formation and adjusting alkalinity.

SOAPING—Mild alkali scour after dyeing or printing. Mild scour of woven fabrics for removal of impurities acquired during finishing operations.

WATER SOFTENING—Precipitating hardness salts.

HYDROGEN PEROXIDE

BLEACHING—Converting color bodies found in natural cotton fiber to colorless form; brightening yarn-dyed woven fabrics.

SODIUM NITRITE

CORROSION INHIBITOR—Reducing corrosion of iron and steel equipment.

SODA ASH

SOAPING—Mild alkali scour after dyeing or printing. Mild scour of woven fabrics for removal of impurities acquired during finishing operations.

SODIUM HYPOCHLORITE BLEACHING—Manufacture of chemical bleach solutions.

WATER SOFTENING—Precipitating hardness salts.

CHLORINE

SODIUM HYPOCHLORITE BLEACHING—Manufacture of chemical bleach solutions.

WATER PURIFICATION—Sterilizing.

WASTE EFFLUENT TREATMENT—Reducing B.O.D. and objectionable odors.

AMMONIUM CHLORIDE

NEUTRALIZING—Reducing caustic alkalinity yarn or fabrics by converting NaOH to NH_3 and NaCl.

ORTHODICHLOROBENZENE

ODOR CONTROL—Reducing objectionable odors of bleachery waste effluents.

SOLVAY PRODUCTS FOR COTTON DYEING & PRINTING

Caustic Soda—Soda Ash—Sodium Bicarbonate—Sodium Nitrite—Potassium Carbonate—Sodium Chloride—Ammonium Chloride—Caustic Potash.

AMERICA'S FIRST PRODUCER OF ALKALIES — SOLVAY — 75th YEAR 1881-1956

SOLVAY PROCESS DIVISION

Allied Chemical

ALLIED CHEMICAL & DYE CORPORATION

61 Broadway, New York 6, N. Y.

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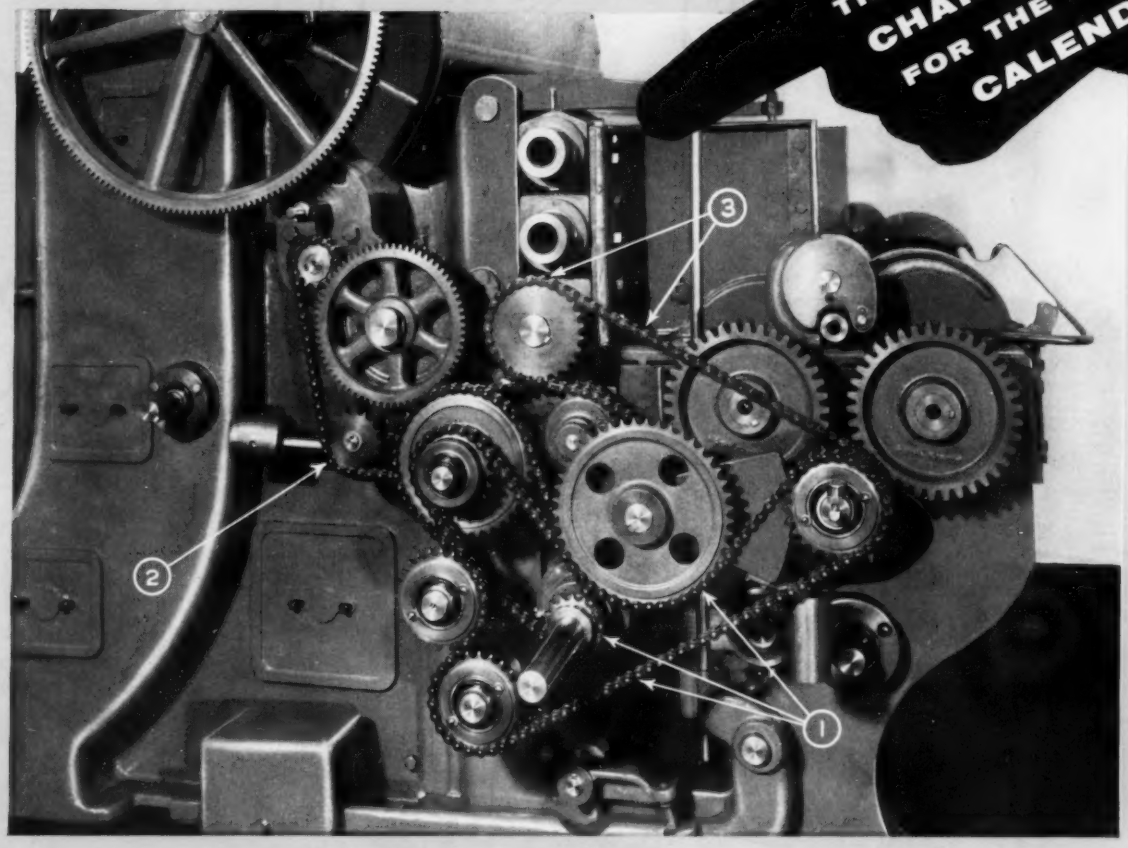
Need New Pickers?

THE COMPLETE CHAIN DRIVE FOR THE CALENDER!



1 The chain drive to replace the old 14/76-tooth gear drive. A silent drive of great flexibility.

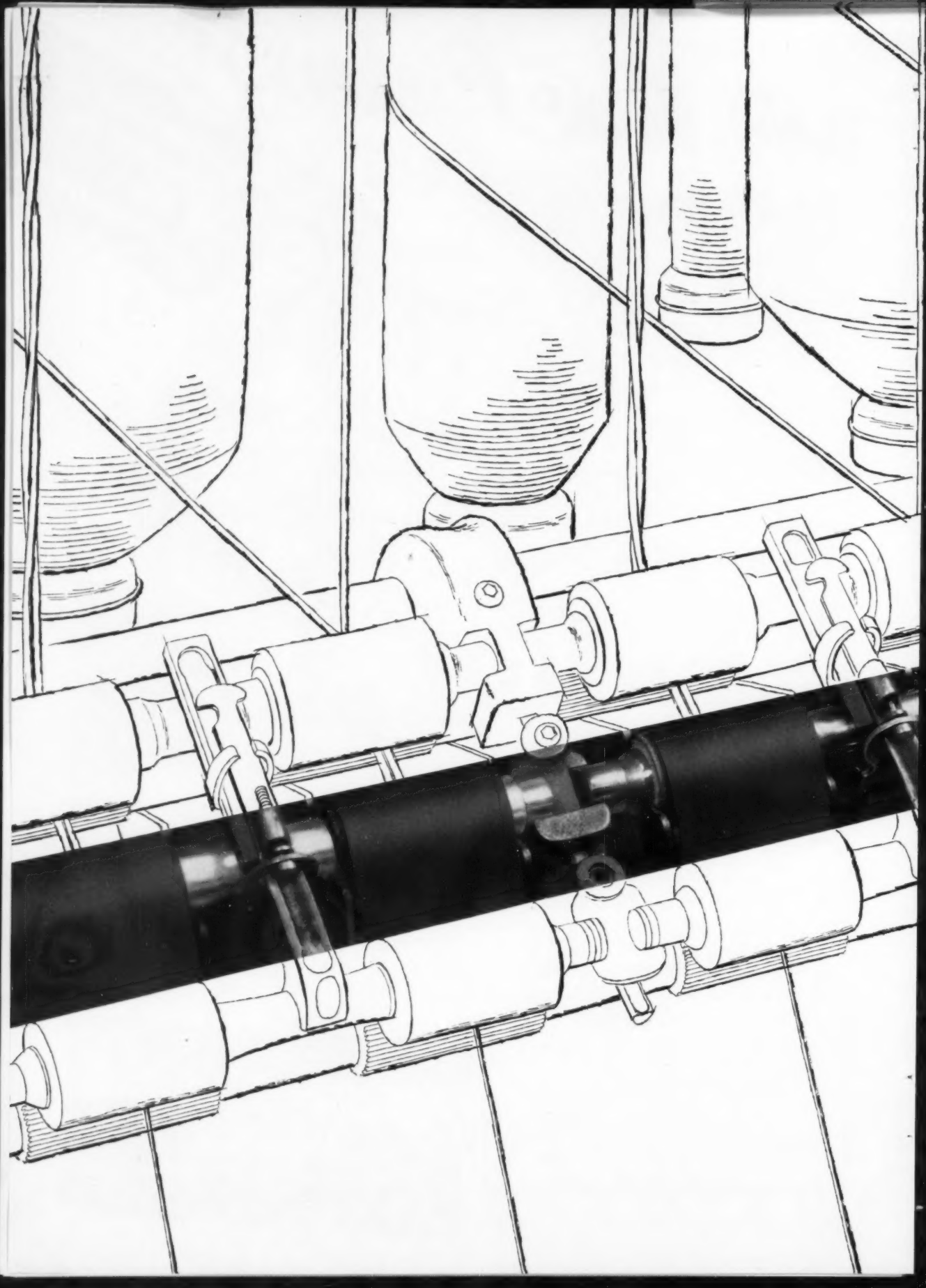
2 The chain drive from the vertical calender rolls to the draw rolls and screens. A simple, silent drive which provides accurate control of the draft between the screens and draw rolls, and those rolls and the vertical calender rolls.

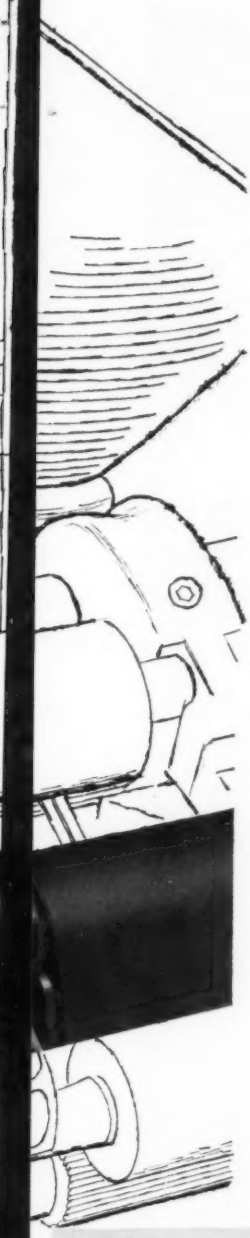
3 The chain drive from the vertical calender rolls to the fluted rolls. A silent flexible drive permitting close control of the draft between the vertical and the fluted rolls.

Note also the roller, on Oilite bearing, which holds the calender rack in place. This replaces the old shoe. The calender rack cross-shaft is on ball bearings—no binding!

AldricH MachinE WorkS

Greenwood, South Carolina





Here's one reason why
Accotex Aprons give good yarn control

Unique test helps Armstrong develop rubber compounds with proper surface friction

To make sure Accotex® Aprons have just the right surface friction to maintain good yarn control, Armstrong research engineers use the specially designed friction tester shown below.

This device determines the amount of surface friction of rubber compounds. Weighted test samples are pushed across a polished steel bar, and the amount of force necessary to move the sample is measured and recorded automatically on a separate test unit.

Tests like these help Armstrong chemists develop Accotex Aprons which have the exact frictional characteristics required by modern, high-draft spinning frames.

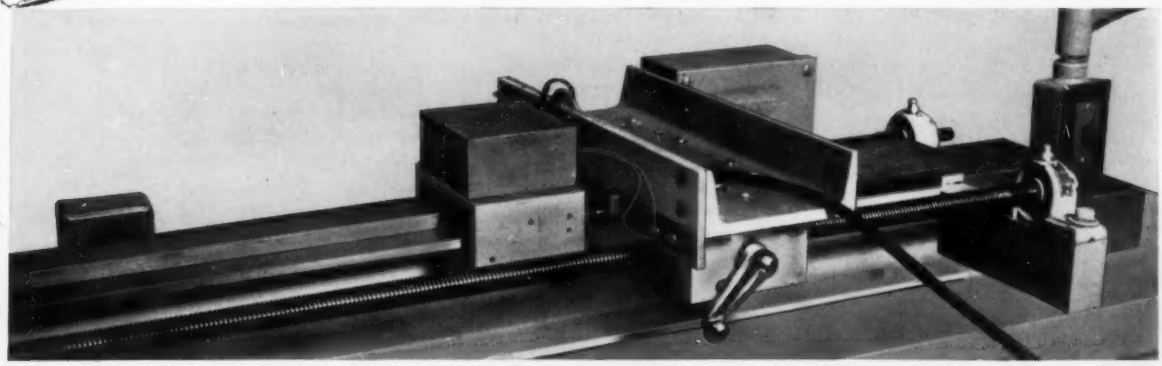
Other advanced research and development methods—plus the very latest production techniques—also assure you that Accotex Aprons will consistently deliver top-quality yarn.

If you're not already using Accotex Aprons, arrange for a test frame next time your Armstrong representative calls. No matter what type of equipment you're using . . . no matter what you're spinning, there's an Accotex Apron specially engineered for your needs.

For the booklet, "Armstrong Textile Roll Coverings and Mill Supplies," write Armstrong Cork Company, Industrial Division, 6405 Ivy Street, Lancaster, Pennsylvania.

Armstrong ACCOTEX APRONS

. . . used wherever performance counts



"FRICTION TESTER." Here's the Armstrong Horizontal Friction Tester. The amount of force needed to push a weighted sample of synthetic rubber across a given length of polished steel is measured on this device and automatically recorded on a separate test unit.

In this textile mill, an overhead "storage loop" for empty tubs conserves floor area. Loop consists of Roller Gravity and Live Roller Conveyors. Tubs received via Vertical Reciprocating Conveyor from Spooler Room on lower floor and removed as needed at end of line.
STOCK LIST

here's one way to keep inventories to an efficient minimum!

By stepping up the tempo of production, by reducing in-process time, many businesses permit the billing of orders in the same month that payment is due on the raw material. No large sums of money are tied up in stocks.

Logan Conveyors provide that all-important means to swifter production, in countless plants the nation over. Whatever the product handled, Logan Conveyors can reduce inventory costs from receiving room straight through to shipping platform, and make other substantial savings, too.

Remember, you always get that "something extra" when you call in a Logan engineer.

LOGAN CO., 206 CABEL ST., LOUISVILLE, KY.

Logan Conveyors

What the TEXTILE MILLS are doing

(Continued from page 46)

fiber, already thrown and ready to be put on the warper, is woven at the Anderson plant and then sent to a finishing plant. The change in production resulted from the trend toward silk as a fashion fabric.

Kerr Bleaching & Finishing Works, Inc., Concord, N. C., is nearing completion of a two-story addition to house new equipment including a tenter frame.

Lebanon Knitting Mill, Inc., has acquired control of South Pacific Textile Mills, which is now known as Lebanon of California. The unit is engaged in knitting, dyeing, and finishing jerseys similar to those produced at the Pawtucket, R. I., plant. Joseph Bailis, who was president of the California firm, is now a working partner.

James Lees & Sons Co. recently acquired a site near Clayton, Ga., for construction of an additional tufted carpet mill to be operated as a subsidiary, Rabun Mills, Inc.

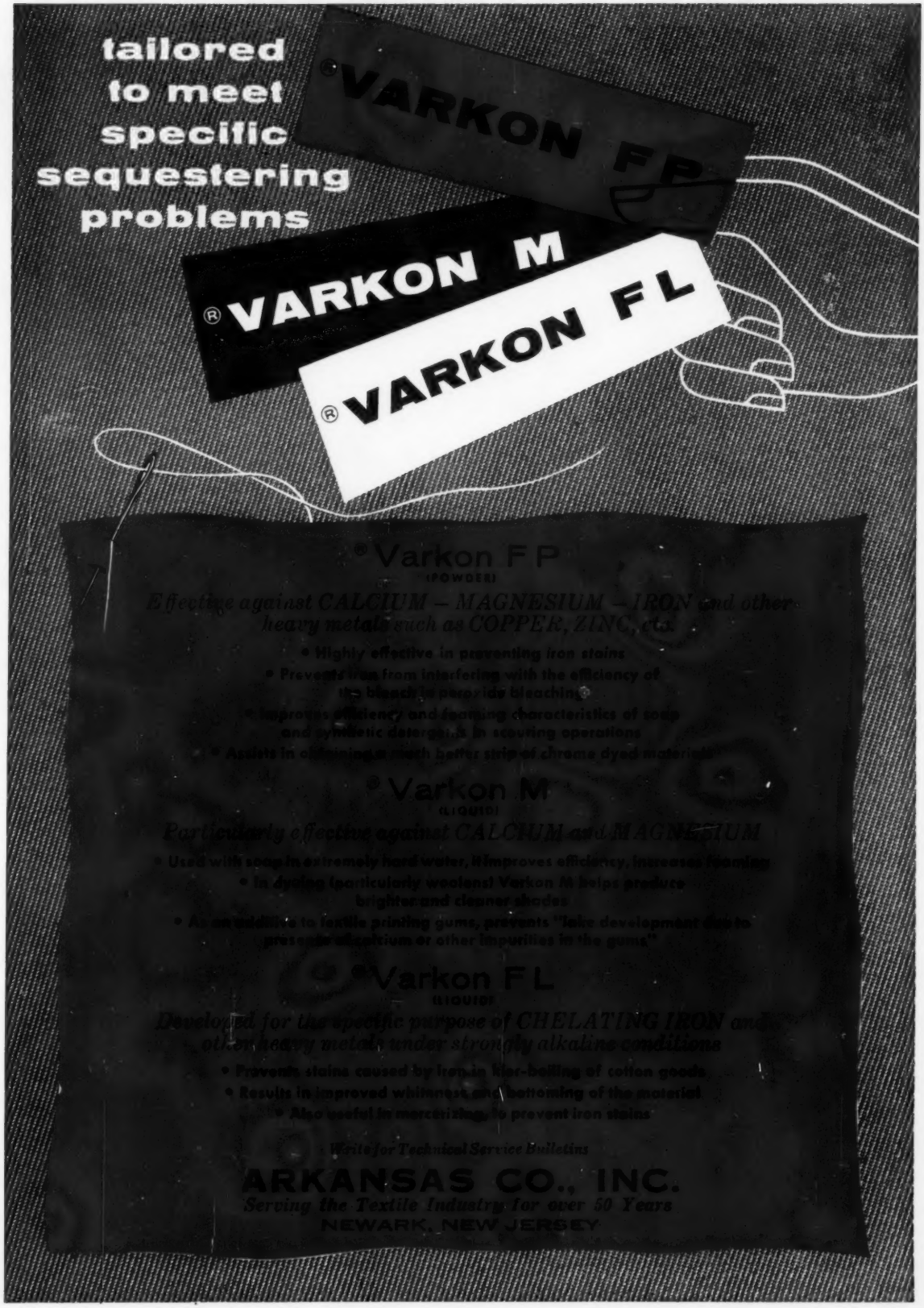
An expansion program at **Marion (N. C.) Manufacturing Co.** includes installation of 5,000 additional spindles, and construction of an additional 10,000 sq ft warehouse, scheduled for completion by the middle of June.

Mylan Finishing Co., Paterson, N. J., has acquired additional plant space for the installation of new finishing machinery during the vacation period in July. Equipment will include padders, enclosed frames, and housings.

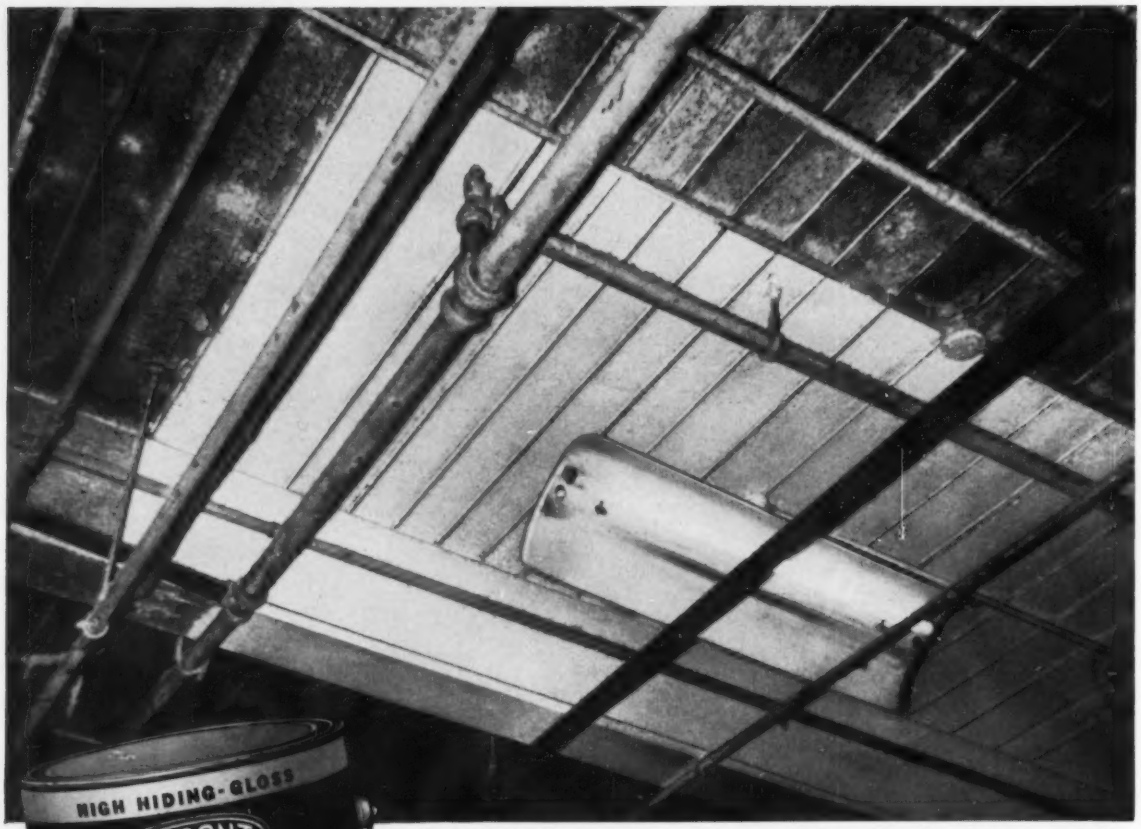
A 25 per cent increase in output of wool and synthetic yarns will be started this month at **National Spinning Co., Inc.,** Washington, N. C. Up-to-date machinery has been installed, and personnel is being added.

Northern Dyeing Corp. has developed a new finish confined to tablecloth manufacturers and known as "Redi-Set-T." It can be used on linen, cotton, rayon, or cotton and rayon blends. It is unlike plastic finishes in that fabric retains its normal identity but has the added

(Continued on page 218)


tailored to meet specific sequestering problems
®VARKON FP
®VARKON M
®VARKON FL
®Varkon FP
(POWDER)
Effective against CALCIUM – MAGNESIUM – IRON and other heavy metals such as COPPER, ZINC, etc.
• Highly effective in preventing iron stains
• Prevents iron from interfering with the efficiency of the bleach in peroxide bleaching
• Improves efficiency and foaming characteristics of soap and synthetic detergents in scouring operations
• Assists in obtaining a much better strip of chrome dyed materials
®Varkon M
(LIQUID)
Particularly effective against CALCIUM and MAGNESIUM
• Used with soap in extremely hard water, it improves efficiency, increases foaming
• In dyeing (particularly woolens) Varkon M helps produce brighter and cleaner shades
• As an additive to textile printing gums, prevents "lake development due to presence of calcium or other impurities in the gums"
®Varkon FL
(LIQUID)
Developed for the specific purpose of CHELATING IRON and other heavy metals under strongly alkaline conditions
• Prevents stains caused by iron in kier-boiling of cotton goods
• Results in improved whiteness and bottoming of the material
• Also useful in mercerizing, to prevent iron stains
Write for Technical Service Bulletins
ARKANSAS CO., INC.
Serving the Textile Industry for over 50 Years
NEWARK, NEW JERSEY

GUARD AGAINST MILDEW!



Unretouched photograph shows paint test applied to ceiling of southern cotton mill five years ago. The white area was painted with DULUX Mildew-Resistant Maintenance White, the rest with orthodox material.

. . . resists yellowing
. . . keeps mill interiors white

Du Pont DULUX Mildew-Resistant Maintenance White Enamel gives you maximum return on your maintenance-painting investment. Specially formulated for textile-plant interiors where mildew is a problem, these three superlative characteristics have been built into this product:

1. MILDEW RESISTANCE . . . Control of destructive, light-robbing mold formation through the incorporation of an inhibitor in the DULUX formula. Extremely toxic to mildew, yet harmless to painters and workers. (Where mildew is especially severe, Du Pont Mildew-Resistant Undercoat is recommended as a first coat.)

2. HIGH HIDING . . . one-coat application, more coverage per gallon. The intense hiding of DULUX Maintenance White has been famous in the textile industry for years.

3. RESISTANCE TO YELLOWING . . . an outstanding DULUX characteristic, proved in hundreds of textile plants. Long after application, a DULUX Maintenance White surface is still brilliant white, still smooth as tile, still easy to clean.

Next time your plant needs maintenance painting, specify DULUX. For lasting protection, it fills the bill. For the sake of economy, it cuts the bill. Write E. I. du Pont de Nemours & Co. (Inc.), Finishes Div., Dept. T-65 Wilmington 98, Delaware.

DU PONT
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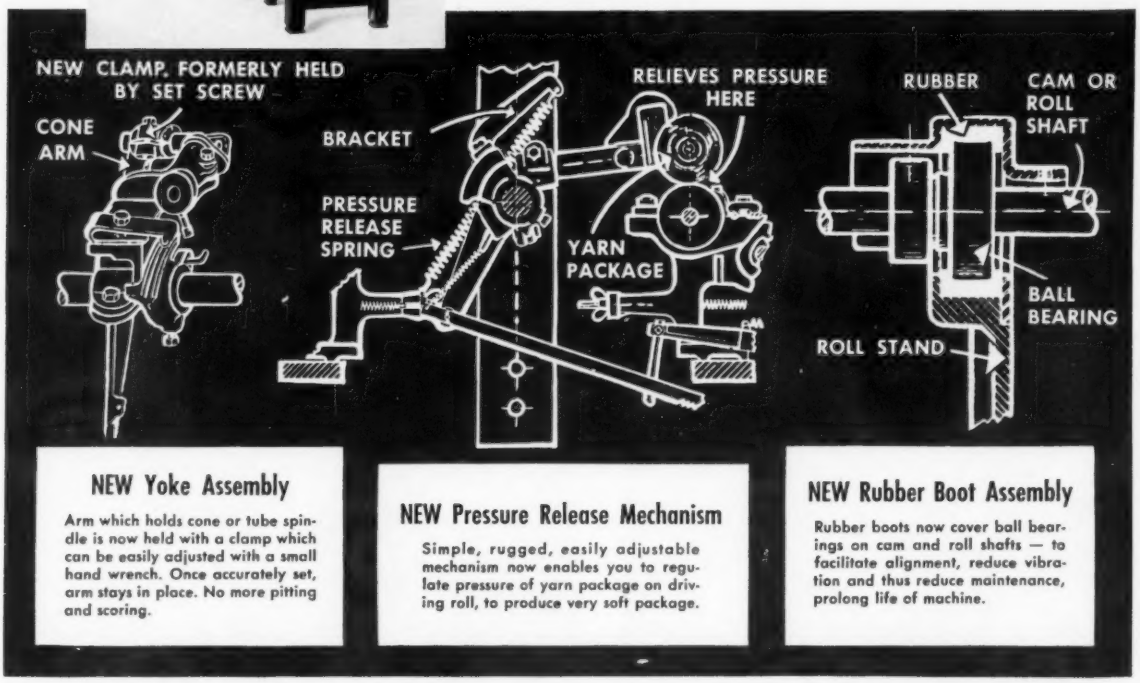
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

PAINTS

Chemically engineered to do the job better

FOSTER
MODEL 102 WINDER



NEW Yoke Assembly

Arm which holds cone or tube spindle is now held with a clamp which can be easily adjusted with a small hand wrench. Once accurately set, arm stays in place. No more pitting and scoring.

NEW Pressure Release Mechanism

Simple, rugged, easily adjustable mechanism now enables you to regulate pressure of yarn package on driving roll, to produce very soft package.

NEW Rubber Boot Assembly

Rubber boots now cover ball bearings on cam and roll shafts — to facilitate alignment, reduce vibration and thus reduce maintenance, prolong life of machine.

Foremost in Flexibility — Continuously Modernized

The Foster Model 102 produces cones with increased taper, assuring free delivery at the knitting machine. It was first to produce the open wind cones most suitable for knitting and will wind any type or count of spun yarn . . . will provide 9 different angles of wind from 9° to 18°, just by changing a few gears . . . can be readily equipped with a conditioning attachment . . . will produce a variety of cone tapers . . . will wind dyed yarn even when damp . . . can be built to wind 6″ or 7″ traverse knitting cones, warping cones, parallel tubes or dye packages — or short traverse cheeses.

Outstanding flexibility has made the Foster Model 102 preferred choice for many purposes for years. It holds its pre-eminence because our policy of continuous modernization constantly improves on its overall efficiency and its already long life expectancy . . . though improvement on some features may be impossible. A few relatively new improvements are illustrated herewith.

Send for Bulletin A-95.
Complete data — no obligation.

FOSTER MACHINE COMPANY

Westfield, Massachusetts, U.S.A.
Southern Office, Johnston Bldg., Charlotte, N. C.

Canadian Representative — Ross Whitehead & Company, Limited, 1475 Mountain St., Montreal, Que. and 35-37 King St., Toronto, Ont.

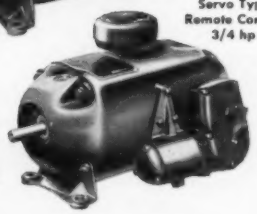
European Representative — Muschamp Textile Machinery Limited, Keb Lane Bardsley, Oldham, England

VICKERS® Variable Speed HYDRAULIC TRANSMISSIONS

Their Rapid and Accurate Response to Input Signals

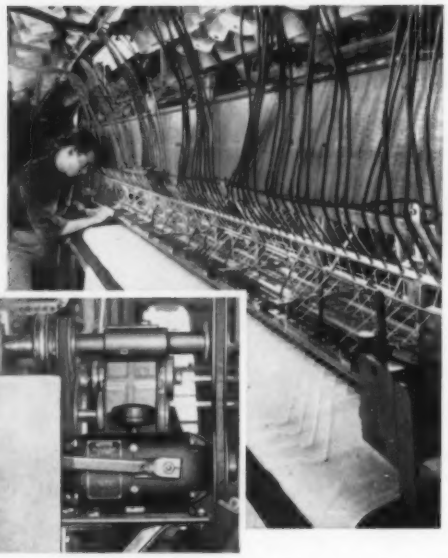
Means:

Handwheel Type
Manual Control
3/4 hp



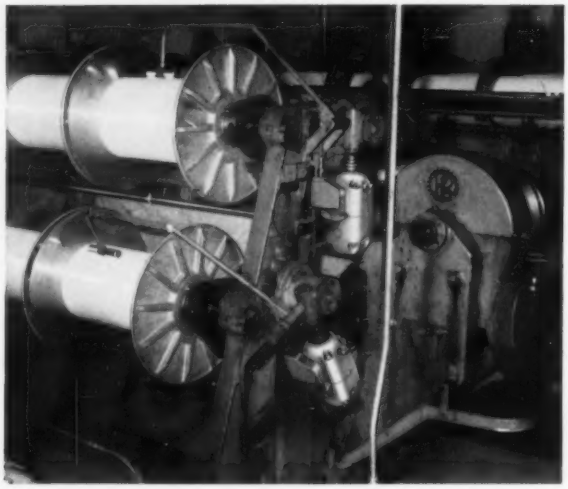
Servo Type
Remote Control
3/4 hp

1 BETTER and FASTER TUFTING



Cabin Crafts, Inc., Dalton, Georgia, makers of tufted textiles, uses Model TR3 Vickers Hydraulic Transmissions to *accurately control the varying lateral position* of the cloth fed at a fixed rate to the fixed position needles that do the tufting. Automatically, the continuous and accurate speed change enables them to manufacture varying patterns in tufting not practical by conventional methods of speed control. New patterns and old patterns alike can be made better and faster because of the extremely sensitive response of Vickers Hydraulic Transmissions to input signals.

2 REDUCED THREAD BREAKAGE



At the E. Richard Meinig Co., Reading, Penna., Model TR3 Vickers Hydraulic Transmissions are used to drive beam rolls of cotton or nylon filament into knitting machines. *Tension of the thread is accurately controlled* due to the infinitely variable speed and the rapid, precise response of the transmissions to input signals. Thread breakage is reduced to a minimum, resulting in increased production, better quality and pattern control. Also, it is possible to run elastic materials on a standard machine with this modification. Maintenance has been negligible since the installation of these TR3 Transmissions in 1948.

WHAT CAN THEY DO FOR YOU

There are numerous other applications in the textile industry where the precise control of variable speed or tension provided by Vickers Variable Speed Hydraulic Transmissions means a better product at a reduced cost. Additional important advantages are automatic overload protection that prevents damage to the machine and the virtual absence of maintenance and downtime. The TR3 is available with a Servo (for use with V dancer rolls, cams, pattern wheels, etc.) or manual control as shown at upper right. *Write for Bulletin 47-408.*

VICKERS INCORPORATED
DIVISION OF SPERRY RAND CORPORATION
ADMINISTRATIVE and ENGINEERING CENTER
Department 1554 • Detroit 32, Michigan

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7395

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

NOPCOSIZE® N

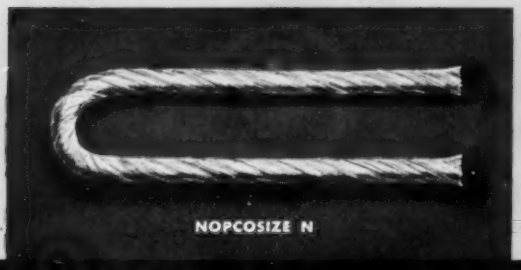
sizes producer's twist and stays flexible!

Yes, it's true! New Nopcosize N stays completely pliable even in the extra-heavy sizing necessary for low twist nylon because it's *internally plasticized* by a special process. Nopcosize N doesn't merely coat —it actually penetrates between the filaments giving proved bonding.

With conventional size, the amount must be limited by its stiffness, but, because Nopcosize N *is* pliable, a greater depth of size protection is possible . . . your best safeguard against filament breakage. This flexibility also prevents Nopcosize N from becoming brittle, flaking off, and acting as an abrasive.

Best of all, fabrics made from warps sized with Nopcosize N scour out to the cleanest goods this industry yet has attained. Internal plasticizing allows depth of protection without causing tear drops, so you're assured of smooth, flawless material.

This all means less time-and-money-consuming extra steps for you. And this clear, aqueous product is so easy to use. Ordinary temperature and concentration changes will never affect its working viscosity. But prove to yourself that Nopcosize N will solve your nylon sizing problems. Nopco Chemical Co., Harrison, N. J.



SEE THE DIFFERENCE! **This enlargement shows how much more flexible yarn is when sized with Nopcosize N. Yarn on the left was sized with 2¼% Nopcosize N. Yarn on the right was sized with 2% of a conventional size.**

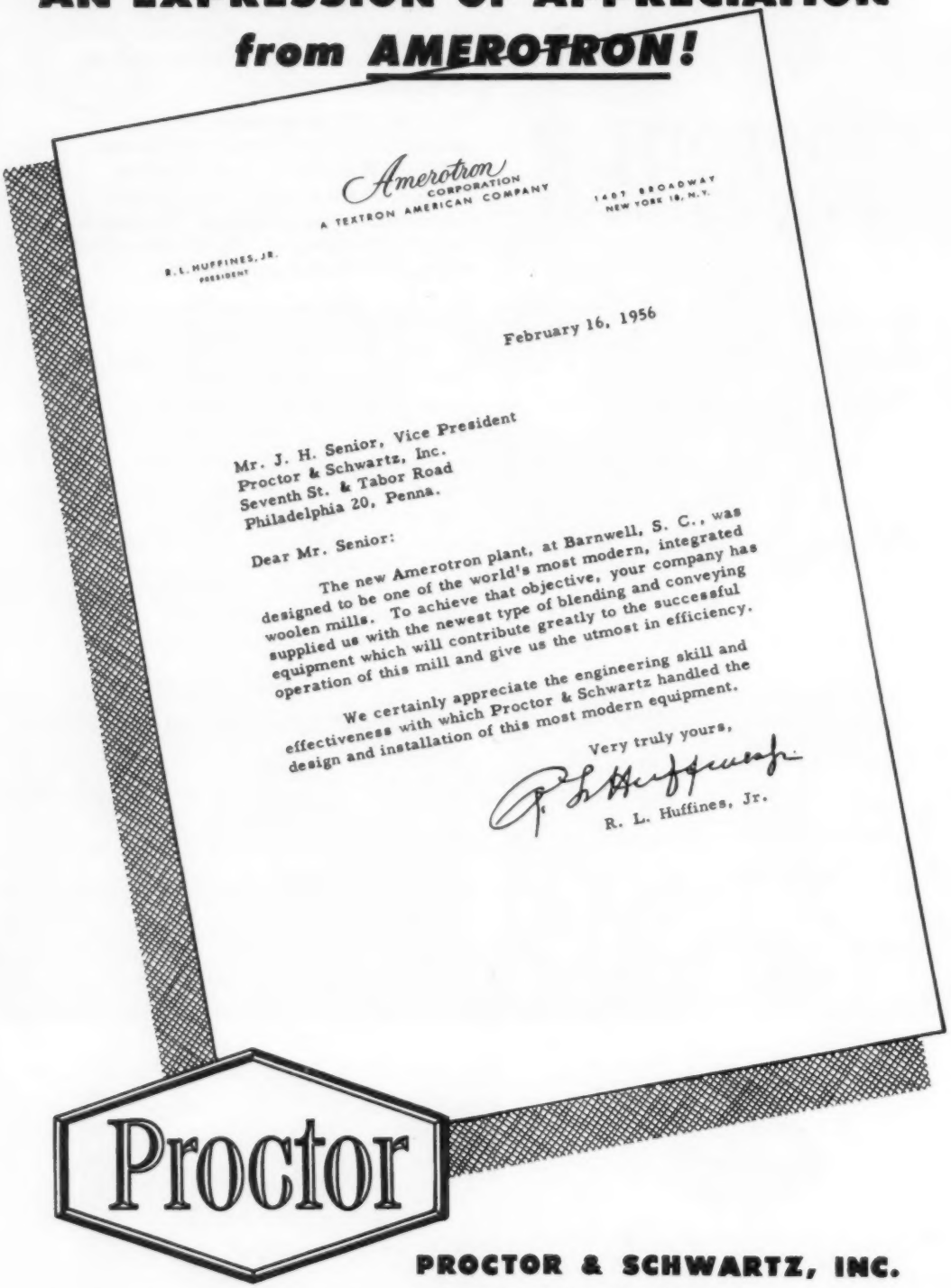
NOPCO

PLANTS: Harrison, N. J. • Cedartown, Ga. • Richmond, Calif.
London, Ont. Canada

NOPCOSIZE N—*your best defense against:*

POOR SCOURING
FILAMENT BREAKAGE
TEAR DROPS
ABRASION

AN EXPRESSION OF APPRECIATION
from AMEROTRON!



Amerotron
CORPORATION
A TEXTRON AMERICAN COMPANY

1407 BROADWAY
NEW YORK 18, N.Y.

R. L. HUFFINES, JR.
PRESIDENT

February 16, 1956

Mr. J. H. Senior, Vice President
Proctor & Schwartz, Inc.
Seventh St. & Tabor Road
Philadelphia 20, Penna.

Dear Mr. Senior:

The new Amerotron plant, at Barnwell, S. C., was designed to be one of the world's most modern, integrated woolen mills. To achieve that objective, your company has supplied us with the newest type of blending and conveying equipment which will contribute greatly to the successful operation of this mill and give us the utmost in efficiency.

We certainly appreciate the engineering skill and effectiveness with which Proctor & Schwartz handled the design and installation of this most modern equipment.

Very truly yours,

R. L. Huffines, Jr.

Proctor

PROCTOR & SCHWARTZ, INC.

Manufacturers of Textile Machinery and Industrial Drying Equipment
Philadelphia 20, Pa.

because Chemstrand has

ONE

integrated nylon plant
(the only one in the country)

ONE

source of raw materials

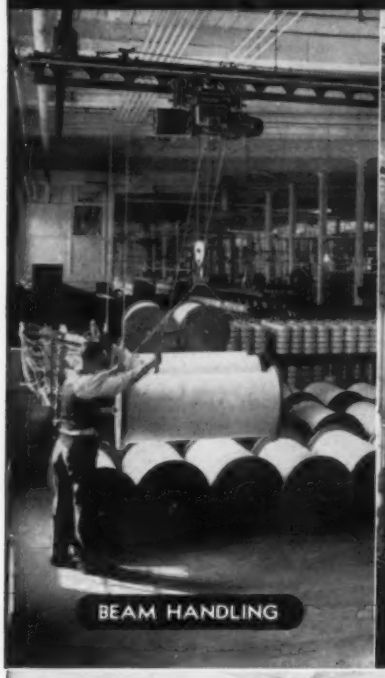
ONE

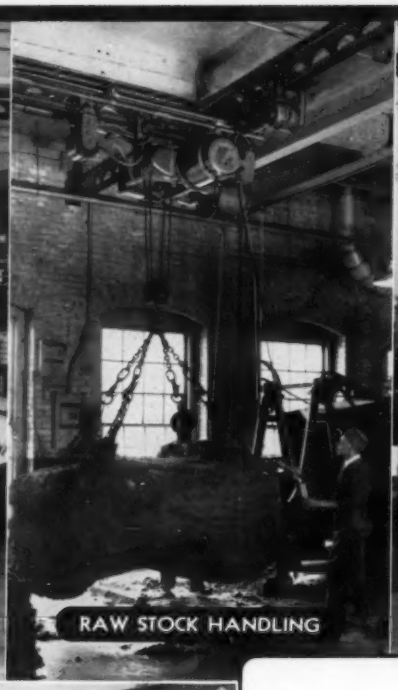
unified quality control system

YOU GET TOP QUALITY NYLON YARN

THE CHEMSTRAND CORPORATION • GENERAL SALES OFFICES: 350 FIFTH AVE., NEW YORK 1, N. Y. • DISTRICT SALES OFFICES: 9 Rittenhouse Place, Ardmore, Pa.; 4 Pearl Street, Dedham, Mass.; 222 South Church Street, Charlotte, N. C. • PLANTS: CHEMSTRAND® NYLON—Pensacola, Fla.; ACRILAN® ACRYLIC FIBER—Decatur, Ala.

TEXTILE MILLS BOOST EFFICIENCY *with* CLEVELAND TRAMRAIL


BEAM HANDLING


RAW STOCK HANDLING

PACKAGE DYEING

CLOTH HANDLING — AUTOMATIC DISPATCH

Efficiency — meaning costs and output of product — has been greatly improved in many textile mills with installation of Cleveland Tramrail, even with other production facilities remaining the same.

During the period following the war it is predicted that the use of Cleveland Tramrail will be accelerated tremendously because textile mills will require more efficiency in operation than ever before if they wish to remain in a favorable competitive position.

No other machinery offers as great returns for the small investment required as overhead materials handling equipment.

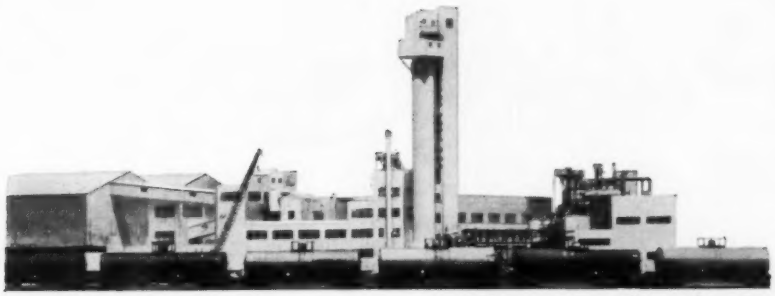
GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
2852 EAST 287th STREET, WICKLIFFE, OHIO

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

your Two best sources for UREA



Allied

...and

Allied

Allied's Nitrogen Division has 2 urea plants – one at South Point, Ohio and one at Omaha, Nebraska. When considering your source of UREA supply, Allied tops the list with its multi-plant production. Quality? Very high. Delivery? Fast – no matter where you are, thanks to widely separated producing locations. Carlots and trucklots from the plants. LCL from warehouse stocks in Passaic, N. J.; Chicago, Ill.; Providence, R. I.; East St. Louis, Ill.; and Charlotte, N. C. All shipments in easy-to-use, 100 lb. moistureproof multiwall paper bags.

U1-29-1

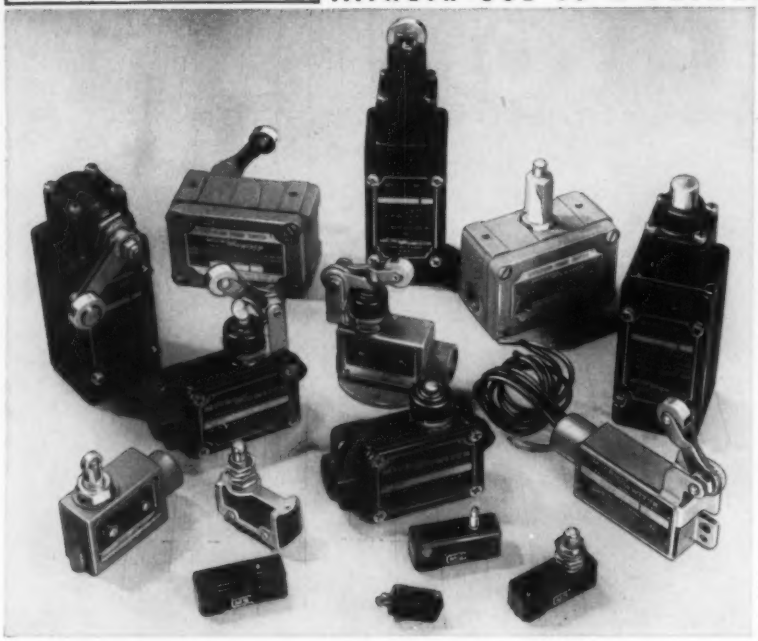
Allied Chemical — NITROGEN DIVISION

40 Rector Street, New York 6, N. Y.

Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Tetroxide • Nitrogen Solutions • Fertilizers & Feed Supplements

MICRO *precision switches*

...THEIR USE IS A PRINCIPLE OF GOOD DESIGN



There are USES UNLIMITED for MICRO precision switches on textile machinery

Thousands of textile machines have been given a new lease on life, made more automatic, more productive and safer by the installation of one or more MICRO precision switches.

Whether you are a manufacturer of new textile equipment or whether you are a plant operating man, it will pay you to know about these extremely reliable, long-life precision switches.

Illustrated on this page are just a few types of these switches which have proved to be valuable in control of textile machinery as limits, safeties and interlocks.

Here are just a few of the many uses mill owners have found for these versatile precision switches:

As trumpet stops for combing heads

•

To prevent needle breakage

•

To eject unfilled quills automatically

•

To control position of pressure roll

•

As thread breakage detectors

•

To position clamps on cloth stretcher

•

As selvedge build-up control

•

As carriage movement controls

To stop bobbin winding when bobbin fills

•

To stop motor when gear box is opened

•

To control tension of cloth

•

To control cloth position

•

As thread run-out detector

•

As fabric thickness detector

•

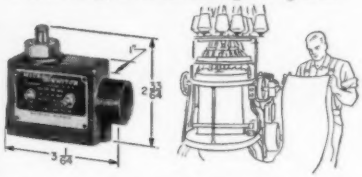
And many others

Stocks of many types of MICRO SWITCH precision switches for plant installations are available from distributors located in key cities for your convenience. For advice on just the switch most suitable for your application, experienced MICRO SWITCH engineering service is available for consultation. Call the branch office nearest you. Distributors and branch offices are listed under "Switches, Electric" in the Yellow Pages.

Send for new catalog 83 on industrial switches

Mills find profits by making machinery safer—more automatic

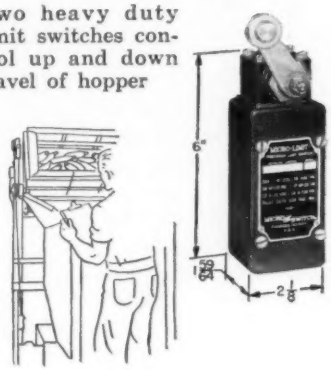
Saves $50 per knitting machine per year



Two MICRO precision switches replace mechanical stops—protect needle beds.

Make quill loading an automatic job

Two heavy duty limit switches control up and down travel of hopper



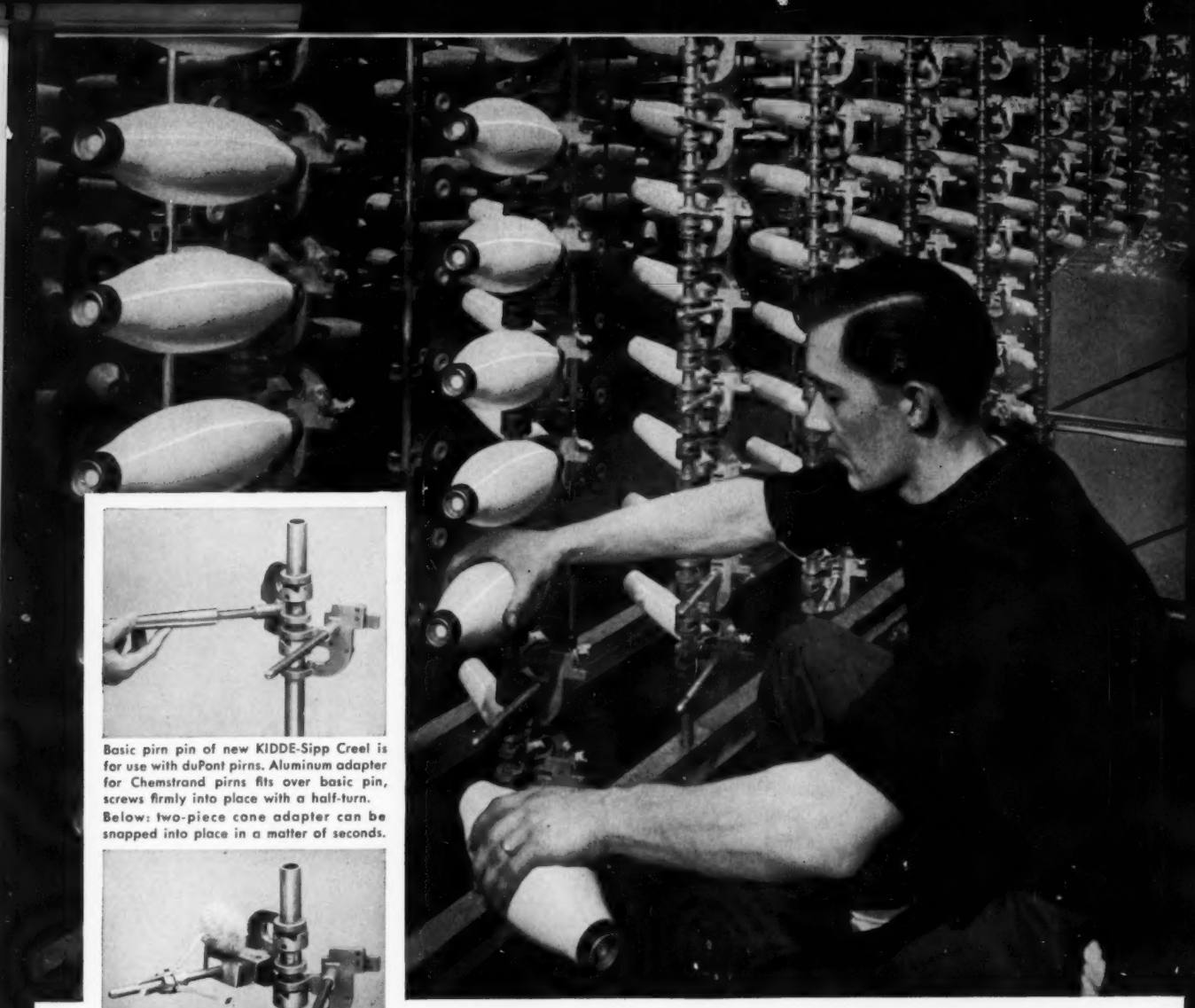
Signals when bobbin needs a refill

As bobbin empties, bar touches switch to signal for refill.

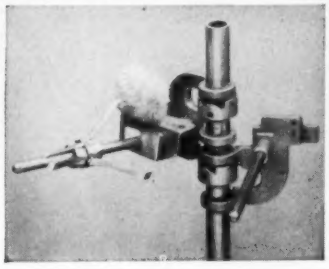
MICRO SWITCH

A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

In Canada, Leaside, Toronto 17, Ontario • FREEPORT, ILLINOIS



Basic pirn pin of new KIDDE-Sipp Creel is for use with duPont pirns. Aluminum adapter for Chemstrand pirns fits over basic pin, screws firmly into place with a half-turn. Below: two-piece cone adapter can be snapped into place in a matter of seconds.



Starting Point for Good Warps

NEW, IMPROVED KIDDE-SIPP CREEL

To help you make better warps . . . and to make your warping more versatile, KIDDE-Sipp creels have been completely redesigned. Package holder arms are much stronger. Adapters are more rigid. Even the heaviest packages will not sag out of alignment.

Basic creels are fitted with pirn holders for the 12" duPont pirn. Adapters for Chemstrand pirns, or for cones, spools and tubes can be added and fastened securely. Change-overs are easy and quick.

The new creels have plated pins with aluminum arms and adapters. Painting is eliminated . . . no rust can get on your yarn.

KIDDE-Sipp creels are available with inside, outside or vertical yarn delivery . . . with washer, post, or pulley tensions and with Kidde tension compensators. All are available with stop motions and with annunciator lights if desired. Write for further information to . . .

TRICOT AND RASCHEL MACHINES • TRICOT WARPERS • HORIZONTAL WARPERS
BEAMERS • CREELS • SLASHERS • WINDER-REDRAWS • TENSOMETERS

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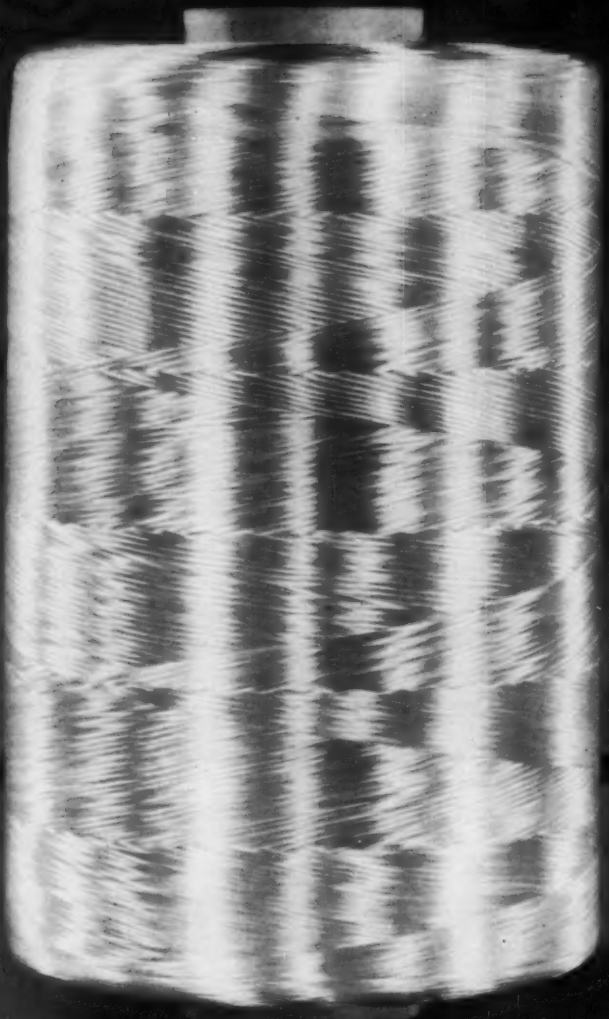
The word KIDDE is the trademark of Walter Kidde & Company, Inc., and its affiliated companies.

NOW, brought to you



caprolan*

NYLON HEAVY YARNS

Allied Chemical's new Caprolan heavy yarns are of particular interest to makers of:

Heavy Duck • Industrial Slings • Fire Hose • Cords & Braids
Upholstery Fabrics • Webbings • Conveyor Belt Fabrics
Rope & Twine • Tapes & Belts • Carpets & Rugs

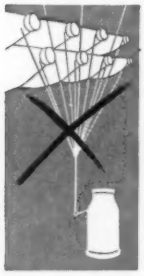
* TRADE-MARK

exclusively by Allied Chemical...Caprolan®!

Nylon Heavy Yarns

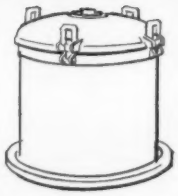
A Completely New Class of Durable Textile Yarns Available in 2,100, 2,500, 5,000 and 15,000 Denier

Mills report these advantages:



1. Cuts Plying Costs! Supplied in the total deniers you need, Caprolan nylon heavy yarns are engineered to your specifications without plies. No need to inventory costly finer deniers. Heavy yarns with nominal twist are supplied on knotless 10-pound parallel nonreturnable tubes.

2. Cuts Heat-Setting Cycles! Another money-saving advantage of these heavy yarns is that heat-setting cycles can be materially shortened because of Caprolan's workability with heat.



3. Minimizes Dyeing Problems! Heavy nylon constructions are much easier to dye when Caprolan heavy yarns are used. Allied's new fiber has a remarkable affinity for all classes of dyestuffs.

Other Heavy Yarns Can Be Engineered to Your Specifications In a Range from 2,000 to 50,000 Denier!

Now, from Allied Chemical—an important new tool for the textile industry—nylon heavy yarns engineered to your specifications! This completely new class of durable textile yarns eliminates need to ply multiple ends of finer deniers to achieve a higher total effect.

Caprolan heavy yarns are versatile, too. Whether you make duck, webbings, carpet, upholstery or any other type of heavy nylon fabric these heavy yarns will find a place in your mill. They are especially effective where toughness and high impact strength are important considerations.

These nylon heavy yarns are made exclusively by Allied Chemical. In addition to all of the known qualities of nylon, Caprolan heavy yarns offer such plus values as affinity for all classes of dyestuffs, *deep* dyeing and uniform level shades.

These new heavy yarns already are in commercial use in important mills and evaluation programs are under way in many others. If you would like more information, technical assistance, or would like to evaluate Caprolan heavy yarns in your own mill, write:

Fiber Sales and Service

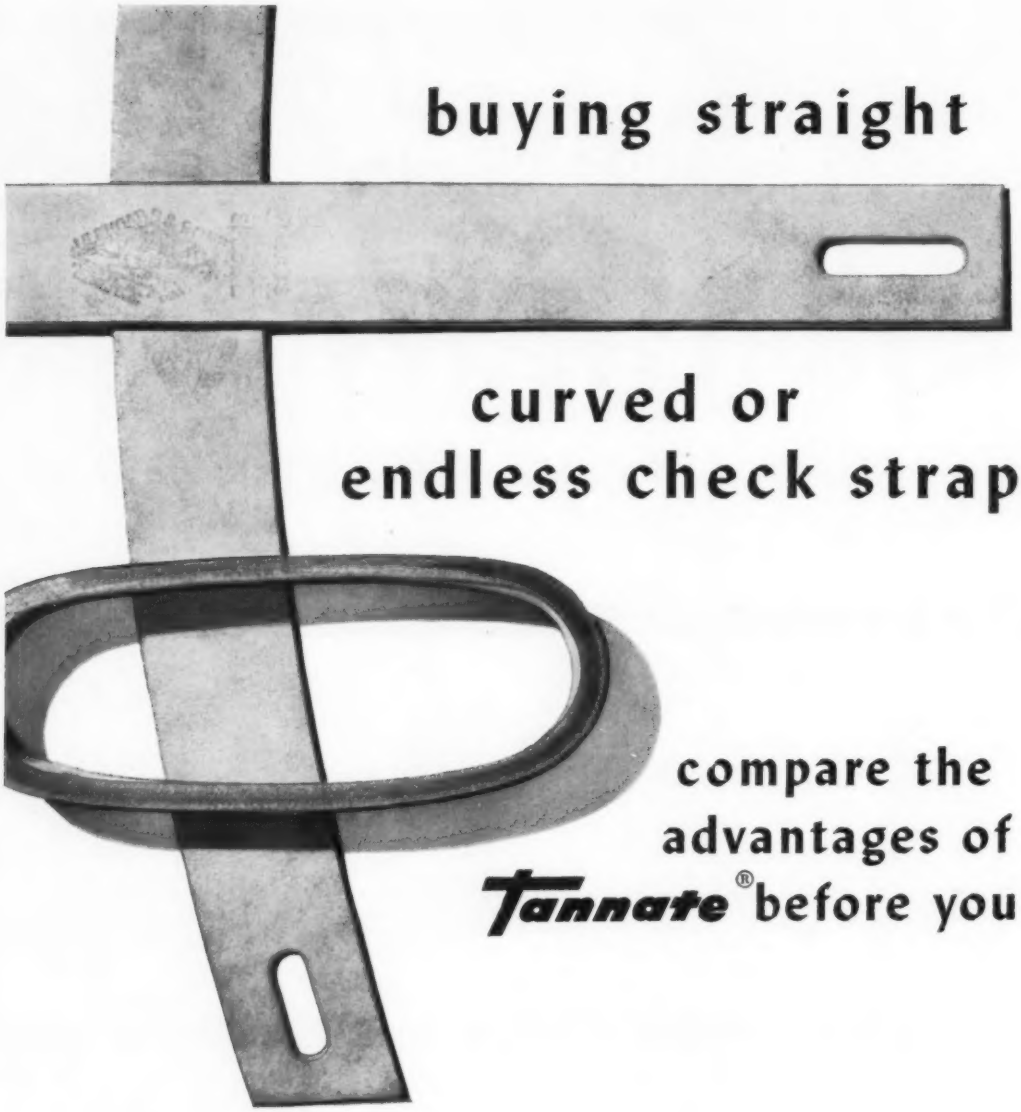
NATIONAL ANILINE DIVISION

Allied Chemical & Dye Corporation

261 Madison Ave., New York 16, N. Y.

Branch Offices—Jefferson Standard Building, Greensboro, N.C., 200-204 S. Front St., Philadelphia 6, Pa., 15 Westminster St., Providence 3, R.I.

SERVING THE TEXTILE INDUSTRY SINCE 1879



buying straight curved or endless check straps?

compare the advantages of Tannate® before you do

More than a dozen mills report cutting strap costs in half with Tannate Special Checks. And why not?

Tannate Special Checks not only are made from the finest hides available but also are specially tanned in our own tannery to meet the very rigid requirements for a top quality check strap leather.

This extraordinary care pays off in long life and low cost operation.

Write for a copy of the broad guarantee covering Tannate Strapping. Remember lower check strap costs are virtually assured when you specify Tannate.

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impart Elegance to your fabrics with textile colors by Hilton Davis

Make your selection from this quality line

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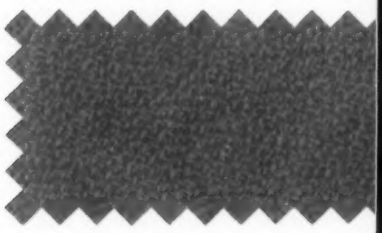
OPTICAL BRIGHTENERS



THE HILTON-DAVIS CHEMICAL CO. DIVISION

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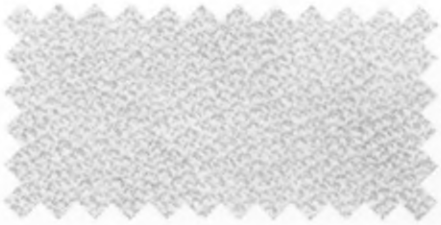

Manufacturers of Colors for the Textile Industry

What's Behind Cocker Equipment?

1. **The longest continuous service on major warp preparation equipment.**
2. **Proven flexibility in thinking and design to solve warp preparatory problems.**
3. **Proven leadership. Most of the features now considered essential for better and more economical warp preparation were pioneered by Cocker engineers... and many of them remained exclusive on Cocker equipment for many years.**

Many years of experience and intimate knowledge of warp preparation stand behind every Cocker machine. You'll do better when you place your confidence in Cocker.

New England and Canadian Representative:

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1215 Green Ave., Montreal 6, Canada

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COCKER
AROUND THE WORLD

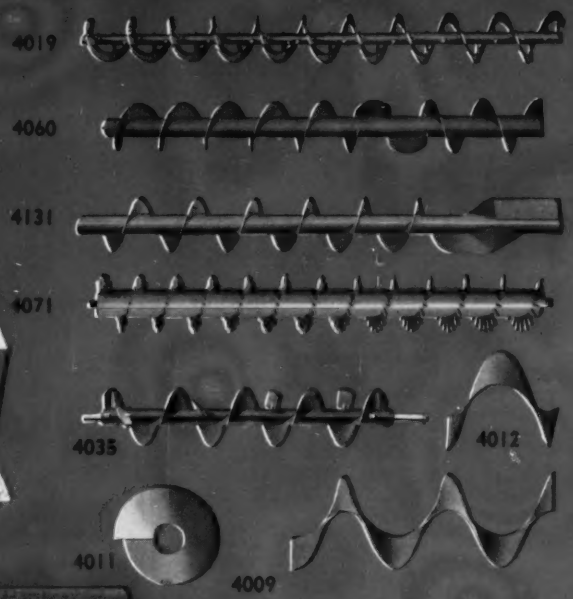
Machine and Foundry Co., Gastonia, N. C.

WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT

Continental SCREW CONVEYORS

ALL SIZES—ALL TYPES

4284


4019
4060
4131
4071
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4012
4011
4009

4240

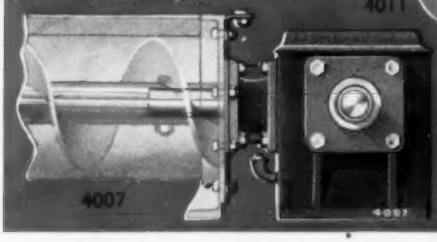
Welded Steel Box End with Pillow Block and Dust Seal

4236

Ball Bearing Hanger

4005

Couplings


4007

Enclosed Countershaft Box Ends—Babbitted or Ball Bearing

4144

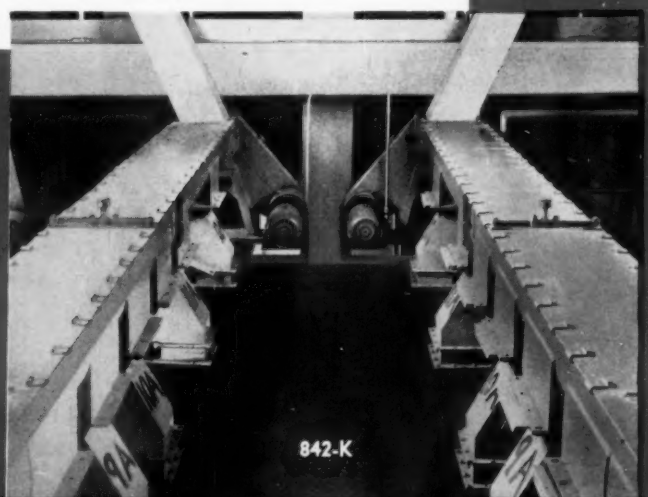
Troughs (All Types)

Continental Screw Conveyors and Accessories are manufactured and stocked in all standard sizes for prompt shipment. Continental is also equipped to manufacture special Conveyors for special purposes, such as Rubber Covered, Stainless Steel, Archimedean and Agricultural types. Write for Catalog CC-541.

CG-5402

4280

Staggered


842-K

4281

Rubber Covered

Industrial Division CONTINENTAL GIN COMPANY Birmingham, Alabama

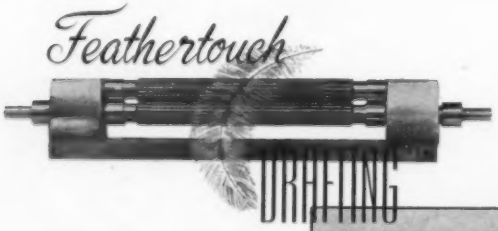
Ideal is the "Jet Propulsion" of Drawing

Ideal High Speed Ball Bearing Drawing Equipment* is as different from ordinary drawing equipment as a jet engine is from the propellor type. Like the jet, it provides better, safer, and smoother operation at approximately twice the speed of ordinary equipment. Here are some of the features which enable Ideal equipment to produce high quality drawing at speeds up to 450 feet per minute.

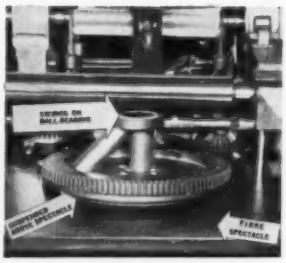
Ideal Ball Bearing Spacing Sections

(Pat.)

These are independent of the rolls . . . do not revolve . . . transmit no resistance . . . never wear to throw the rolls out of alignment . . . and provide free-floating top roll action which automatically evens out thick and thin places in the drawing sliver. They positively prevent cutting, bruising, or damage of any kind to stock.



Ideal High Speed Coiler Tube Mechanism



This is suspended *above* the spectacle by means of a ball bearing ring *at the top* and swings lightly and freely on this frictionless bearing. Ball bearing coiler shaft, studs, and upright shaft also contribute to smooth "jet propulsion" action at any speed you wish to attain. Fibre gears run noiselessly and dissipate heat.

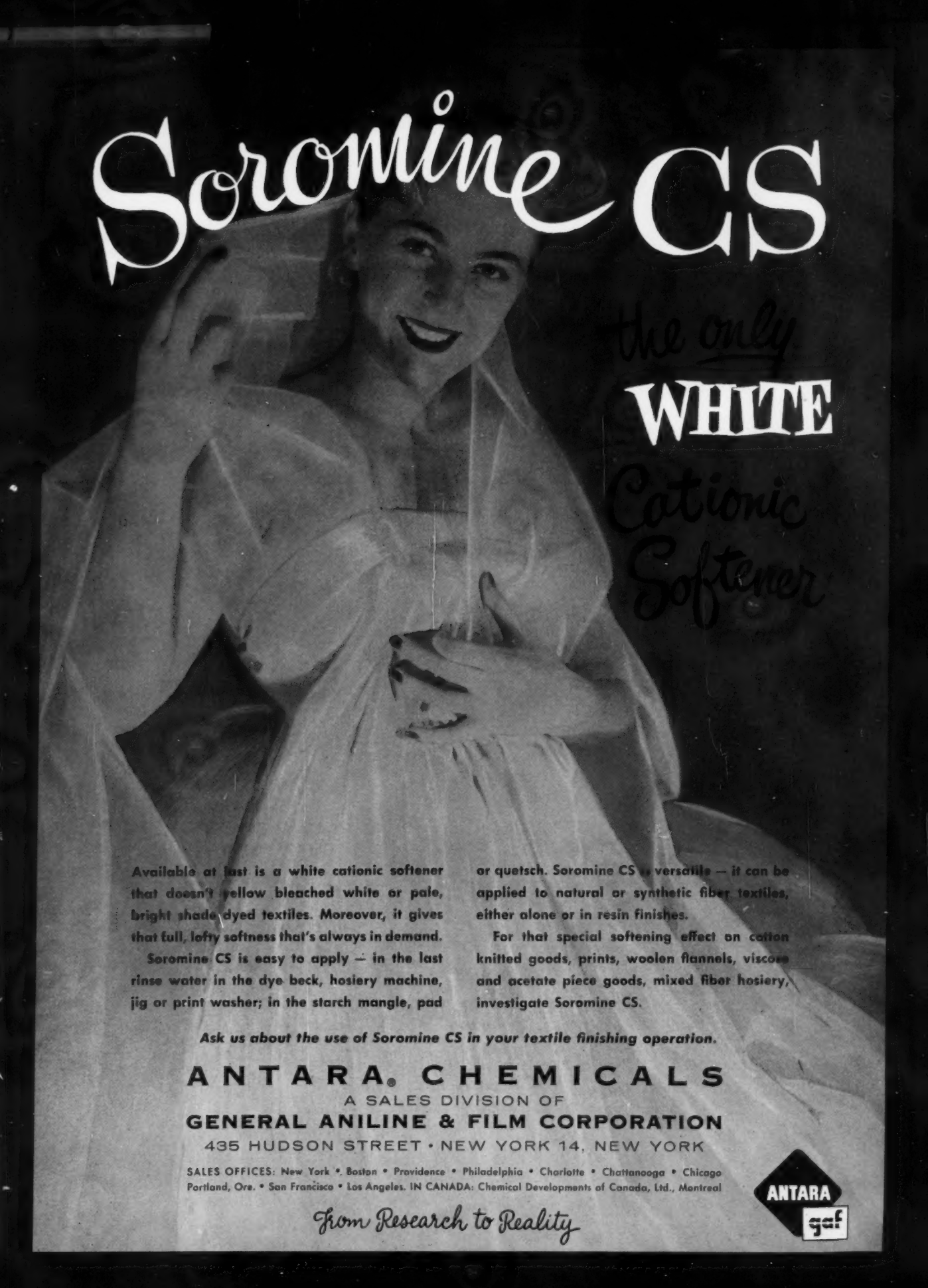
New Ideal Knock-off Action

Stops the frame instantly at the first sign of a tube gear choke-up. Eliminates the fibre breakage and danger of machine damage caused by formation of hard masses of packed fibre.

You can get Ideal jet-like speed on new Ideal Frames or in replacements on your present frames. Write for full information today.

* Patent Nos. 2,610,363; 2,490,544; 2,412,357. Other patents pending.

Ideal Industries, Inc.
Bessemer City, N. C.



Available at last is a white cationic softener that doesn't yellow bleached white or pale, bright shade dyed textiles. Moreover, it gives that full, lofty softness that's always in demand.

Soromine CS is easy to apply — in the last rinse water in the dye beck, hosiery machine, jig or print washer; in the starch mangle, pad or quetsch. Soromine CS is versatile — it can be applied to natural or synthetic fiber textiles, either alone or in resin finishes.

For that special softening effect on cotton knitted goods, prints, woolen flannels, viscose and acetate piece goods, mixed fiber hosiery, investigate Soromine CS.

Ask us about the use of Soromine CS in your textile finishing operation.

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A SALES DIVISION OF

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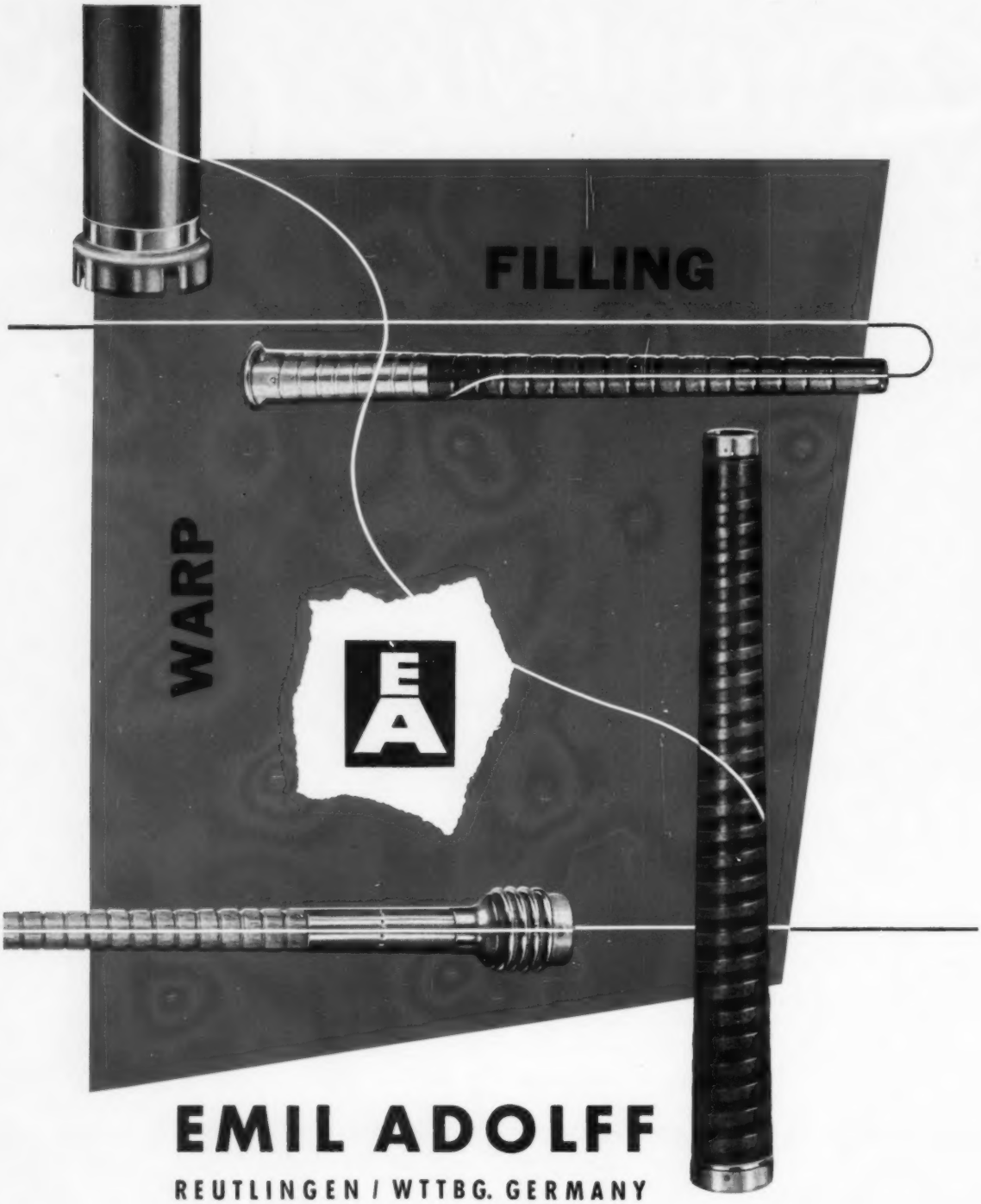

EMIL ADOLFF

REUTLINGEN / WTTBG. GERMANY

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FOR FINISHING RAYONS AND COTTONS

a smooth hand with brilliant color

CLEARFILM is a unique, thin-cooking starch derivative—*developed by National through chemistry*—for finishing rayons and cottons. It is non-congealing. Penetrates quickly at normal room temperature. Forming films that are strong, flexible —*yet smooth and supple to the hand!* Further, films are crystal clear. Prints and colors retain all of their original brilliance.

EXTENDER FOR RESINS

CLEARFILM is highly recommended as a crisping agent and extender for use with many thermosetting resin finishes.

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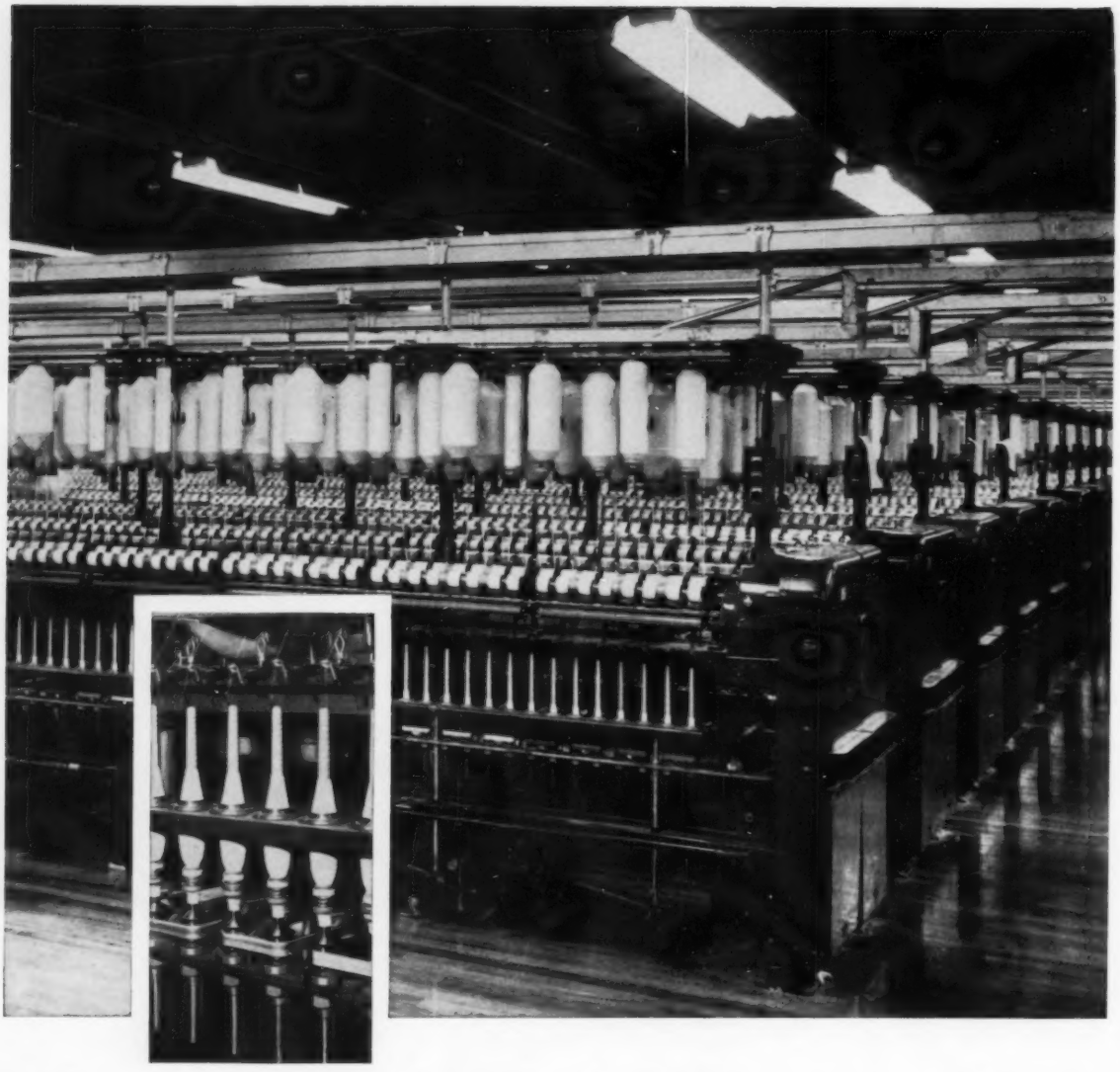

Marquette TOP DRIVE FILLING SPINDLES
increase production 15% to 18%

The above photographs show a typical installation of the new Marquette Top Drive Filling Spindles, with hardened steel blade and exclusive full-floating foot-step bearing.

Marquette Roller Bearing Spindles are giving excellent results in many mills. Among their advantages are higher spindle and front roll speeds, low ends down, savings in doffing, savings in the weave room, and savings in power and maintenance.

Marquette Roller Bearing Spindles can produce more yarn at lower cost in *your* mill. We'll be glad to prove this through a test installation. Contact our home office or one of our representatives.

Representatives: WILLIAM P. RUSSELL, BOX 778, ATLANTA, GA.
C. H. WHITE, MOUNT HOLLY RD., ROUTE 6, CHARLOTTE, N. C.
R. MICHAEL TURNER, 100 CHESTNUT STREET, CLINTON, S. C.

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Other Marquette Products: SPRING CLUTCHES
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"Sludge and rust are things of the past with GULFSPIN on the job,"

*says this prominent southern mill.**

The Technical Assistant to the General Manager of this prominent Southern mill and Gulf Sales Engineer C. T. Timmons watch spindles lubricated with Gulfspin spin clean and free.

"Sludge, rust, and sticking spindles ceased to be a problem when we switched to Gulfspin three years ago," report mill personnel.

Many other leading textile mills have discovered that Gulfspin contributes to smoother operation, rock-bottom maintenance and power costs. Then too they appreciate the fact that spindle bases don't have to be cleaned so often.

Gulfspin works three ways to keep spindles clean and insure smoother spindle operation: First, it's oxidation stabilized to resist sludge formation. Second, it prevents contaminants from depositing in spindle bases, a major cause of spindle vibration. Third, it provides effective protection against rust—reduces bolster wear.

Contact a Gulf Sales Engineer and let him demonstrate Gulfspin's superiority on your frames. You'll find the number of your local Gulf office in the telephone directory.

**Name furnished upon request.*

Gulf Oil Corporation · Gulf Refining Company
1822 Gulf Building, Pittsburgh 30, Pa.

GULF

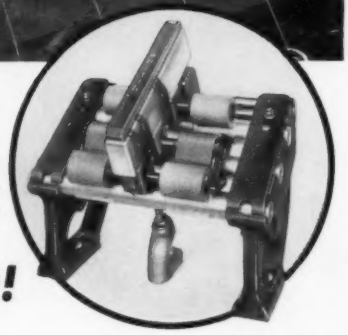
THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

it's SIMPLE

it's ACCURATE

it's CLEAN

it's UNITROL*



Above — Mill installation of UNITROL.
Right — Detail of new unit and rolls.

. . . and only WHITIN *has it!*

* New Center Suspension Weighting Unit and New Top Rolls for Spinning

Whitin's new UNITROL** Center Suspension Weighting Unit and new top rolls for spinning provides maximum performance and yarn quality combined with new lows in cleaning, maintenance, lubrication and spinning costs. It is standard on Whitin spinning frames and available for change-overs. UNITROL has been thoroughly tested in large mill installations.

- **True precision construction**
- **Pre-set internal spring weighting**
- **No levers, saddles or dead weights**
- **Picking reduced 95%**
- **Run out — .001" or less**
- **Whitin anti-friction front rolls; non-lubricated middle and back rolls — all new in design**
- **Complete lint exclusion and grease retention**
- **Smoothly streamlined**

FOR 125 YEARS SERVICE TO THE TEXTILE INDUSTRY

Write today for complete information

Whitin MACHINE WORKS

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** TRADE MARK

For colors that match in materials that differ

Wherever color counts, you can count on Sandoz. You will benefit from our years of experience in meticulous color matching, from our pioneer research in the formulation of dyes for mixed fiber blends.

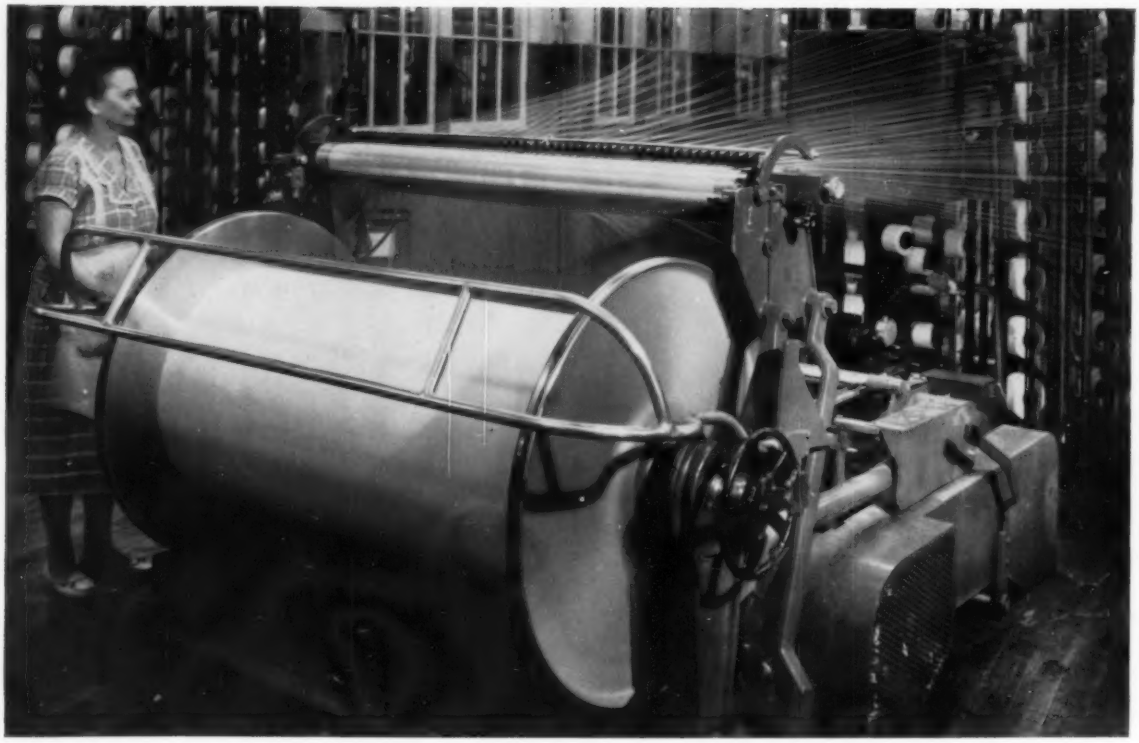
For example—if you are dyeing "Match Mates" of an Orlon* sweater and wool skirt... the Sandocryl Method of dyeing the Orlon sweater will give colors that match the wool skirt—both in daylight and artificial light.

We are specialists in specifics . . . in meeting the differing requirements of dyes for apparel, automotive and decorative fabrics. Whatever the problem—Sandoz experience is at your service, ready to produce effective and profitable results. SANDOZ CHEMICAL WORKS, INC., 61-63 Van Dam St., N. Y. 13, N. Y., ALgonquin 5-1700.

*DuPont T.M.

SANDOZ

SANDOZ THINKS AHEAD WITH TEXTILES



Picture by courtesy of Laurens Mills, for whom Deering, Milliken is selling agent.

HAYES giant beam improves efficiency for cotton mills

Here is the new giant 38" x 54½" Aluminum Section Beam for cotton and spuns! This beam, for the first time in the textile industry, is now going into leading cotton mills to *improve their efficiency, cut costs,* and *increase profits.* One of these 38" beams does the work of two 28" beams, — saving one-half the handling time.

LIGHTWEIGHT—207 lbs.

CAPACITY—Net weight of yarn 1050 lbs.

SMOOTH and TRUE-RUNNING — No splintering, no distortion due to atmospheric changes, throughout the life of the beam. Insures better warps.

BALANCE—Beam is balanced at Hayes Industries to run up to 1000 yards per minute without objectionable vibration.

REDUCES COST—You *handle* half as many beams for the same production. Simple assembly for low maintenance cost should damage ever occur. Beams shipped knocked down to reduce shipping costs and storage space.

ADAPTABILITY—Fits all current types of warpers.

Send Coupon Today For Complete Information

HAYES INDUSTRIES, INC.
JACKSON, MICHIGAN

THE WORLD'S LARGEST PRODUCER OF LIGHT METAL BEAMS

Southern Representative:
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New Bedford, Mass.

Eastern Representative:
J. Paul Laird
Philadelphia, Pa.

Canadian Representative:
J. S. Fallow & Co.
Montreal, Canada

HAYES INDUSTRIES, INC., Jackson, Michigan

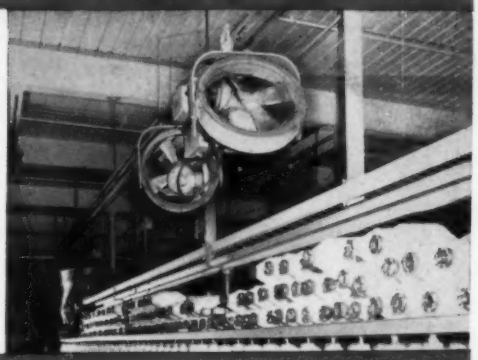
( ) Please quote prices and deliveries.
( ) Have representative call to give me data on the 38" beam.
I would specially like to know
.....
.....

Name .....
Title .....
Company .....
Address .....
City ..... State .....

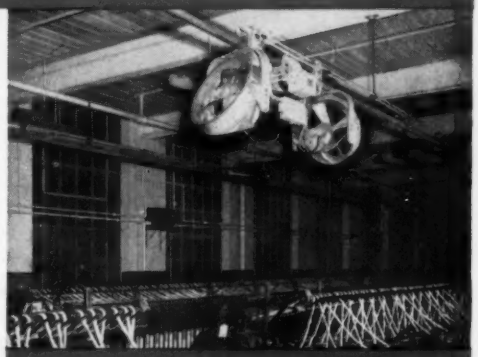
*Any*where in your mill . . .

LOUDEN AUTOMATIC TWIN-FAN CEILING CLEANERS KEEP CEILINGS CLEAN AND FREE OF LINT

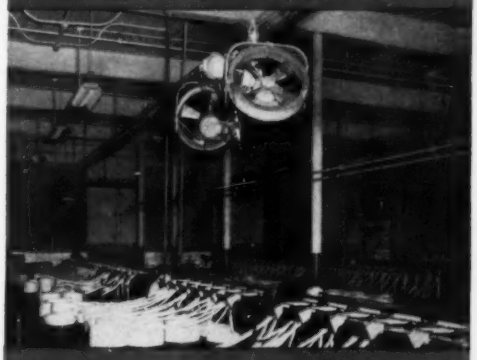
SPINNING FRAMES



ROVING FRAMES



DRAWING FRAMES



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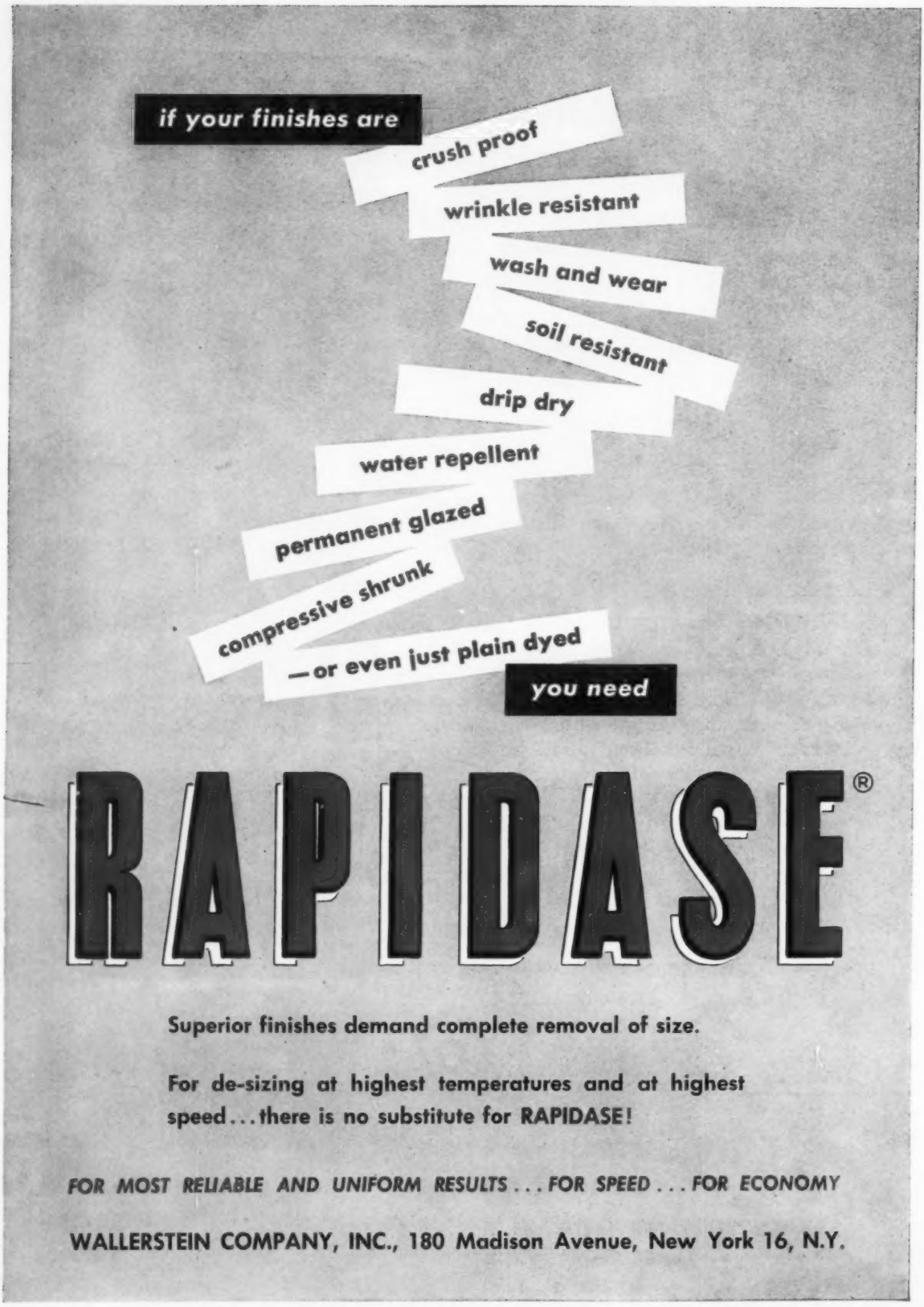
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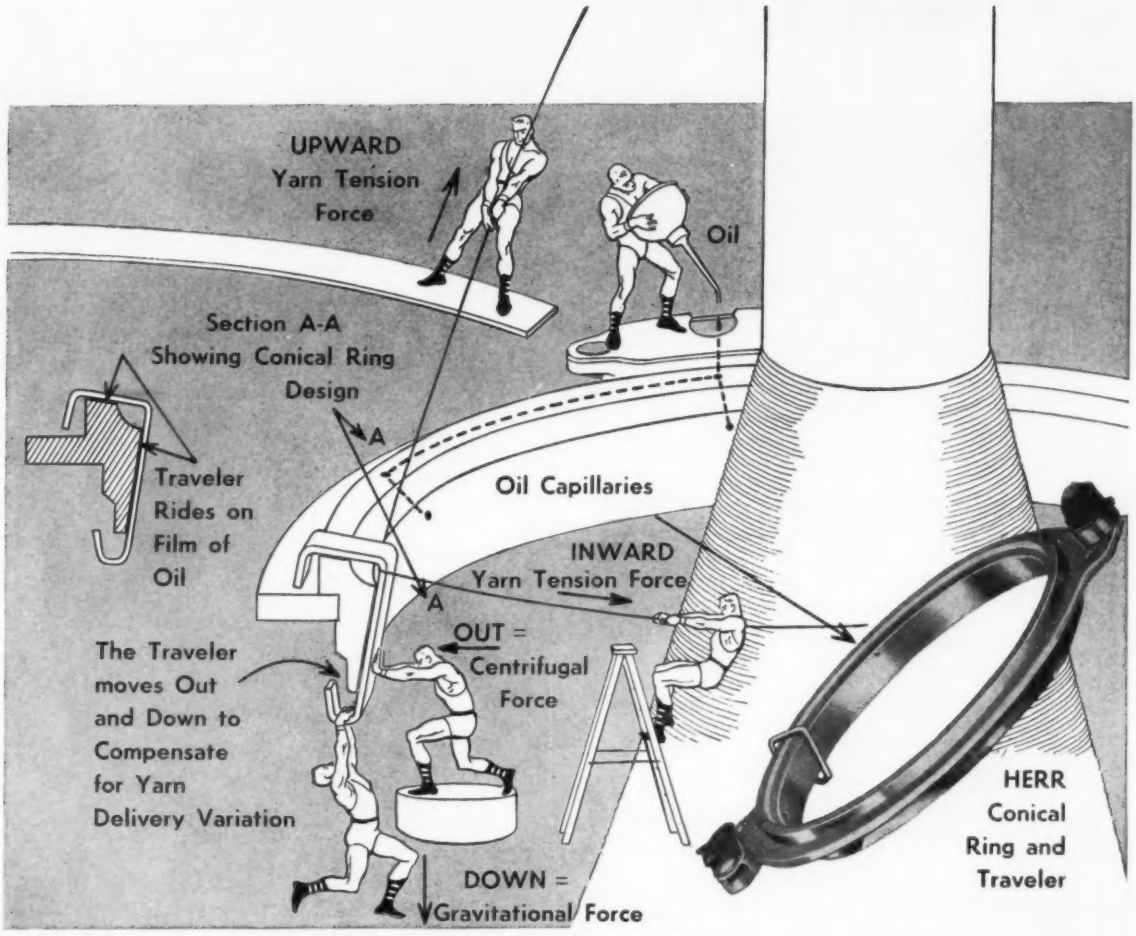

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RESULTS

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The Herr Conical Ring Design equalizes the yarn tension forces (upward and inward) and the Traveler centrifugal and gravitational forces (outward and downward). These opposing forces are balanced and the traveler rides on the ring with minimum frictional contact.

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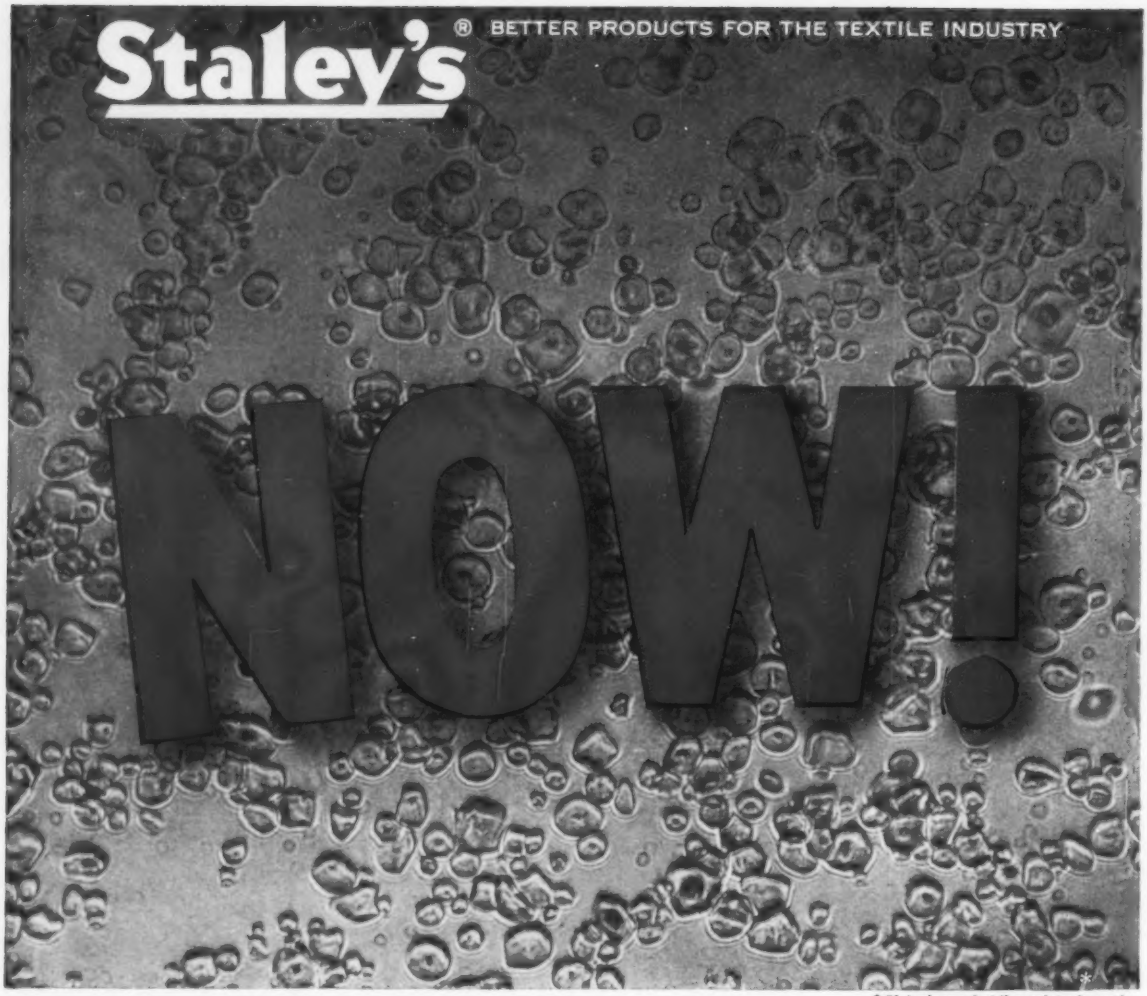

* Photomicrograph of dispersed starch granules.

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NEW! **STACOLLOID® Gums** —A brand new family of starches . . . exceptional non-congealing properties, outstanding viscosity stability, excellent film-forming properties and clarity of solution. Available in a complete range of viscosities at different levels of chemical substitution.

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News IN BRIEF

Mill Spending to Rise. The Securities and Exchange Commission and the U. S. Department of Commerce expect textile manufacturers to spend $389 million

during 1956 for new plants and equipment. This will be above the expenditures for the past three years, but less than in the record year of 1951, when $531 million was spent.

Nylon Makes Denim Wear Longer. According to the Du Pont Co., an increase of 70 per cent in the wear life of denim work trousers resulted from the addition of 25 per cent nylon reinforcement in the warp of the fabric. In wear tests, the nylon-reinforced trousers had an average life of 228 days, compared to an average of 134 days for conventional trousers of the same weight and construction.

Latex Seminar for Atlanta. A technical seminar on synthetic latex polymers, sponsored by the Chemical Division of Goodyear Tire & Rubber Co., will be held at the Hightower Textile Building, Georgia Tech, Atlanta, on May 4.

Europeans Skeptical of Trend to Seamless. European hosiery manufacturers are following the trend to seamless stretch hosiery, but are not yet convinced that it is more than a fad, according to M. P. DeLeo, export manager for Morris Speizman Co. Most of these mills are demanding that machinery be versatile; it should be able to produce conventional seamless hose, "imitation full-fashioned," or stretch seamless hose. Most production of men's and children's hose is 36-gauge or coarser, but one full-fashioned mill is producing full-fashioned 90-gauge perlon hosiery.

Long Staple Men Ask Quotas. Establishment of a global quota on imports into the United States of all cottons of 1⅛-inch staple and longer was asked in a resolution passed by the Supima Association of America at its recent annual meeting. The Association also urged that the 120,000 bales of extra long staple cotton now held in Commodity Credit Corporation stocks be disposed of as soon as possible.

Ford Men Study Textiles. To obtain the most up-to-date information on fibers and fabrics, 145 Ford Motor Co. employees recently completed a 46-hour training course on automotive fabrics. Those who enrolled in the course were from the departments of the company involved with the interior trim of Ford cars. Attendance was on a voluntary basis, with most of the students attending on their own time.

Wool Carders' Guild Meeting. The Carders' Guild Section of the National Association of Woolen and Worsted Overseers will hold its semiannual meeting on May 18 at the Hotel Bancroft, Worcester, Mass. Principal speaker is A. P. Aldrich, Aldrich Machine Works, who will discuss "Experiences in Fiber Blending."

Air Force Likes Dacron. Dacron blended with 50 per cent wool or viscose rayon makes a summer uniform superior to 100 per cent wool or synthetic fibers, according to a recent Air Force research report. The blend held up best in a series of wear tests designed to measure wrinkle resistance, recovery from wrinkles, shape retention, stretch resistance, abrasion

resistance, fabric texture, heat resistance, weakening by bleaches, high flex life, quick drying, and strength. Weak points found were melting by tobacco ashes and development of static electricity. Copies of the 20-page report, "Development of Fabrics for USAF Summer Uniforms Using Synthetic Fibers," PB 111763, are available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Price: 75 cents.

World Cotton Spindles Increase. The number of cotton spindles in place throughout the world totaled 129.8 million on July 31, 1955, according to the International Federation of Cotton and Allied Textile Industries. This represented an increase of about 500,000 in two years. There were decreases in Europe and North America, but these were offset by gains in Asia and Africa. Figures for the various

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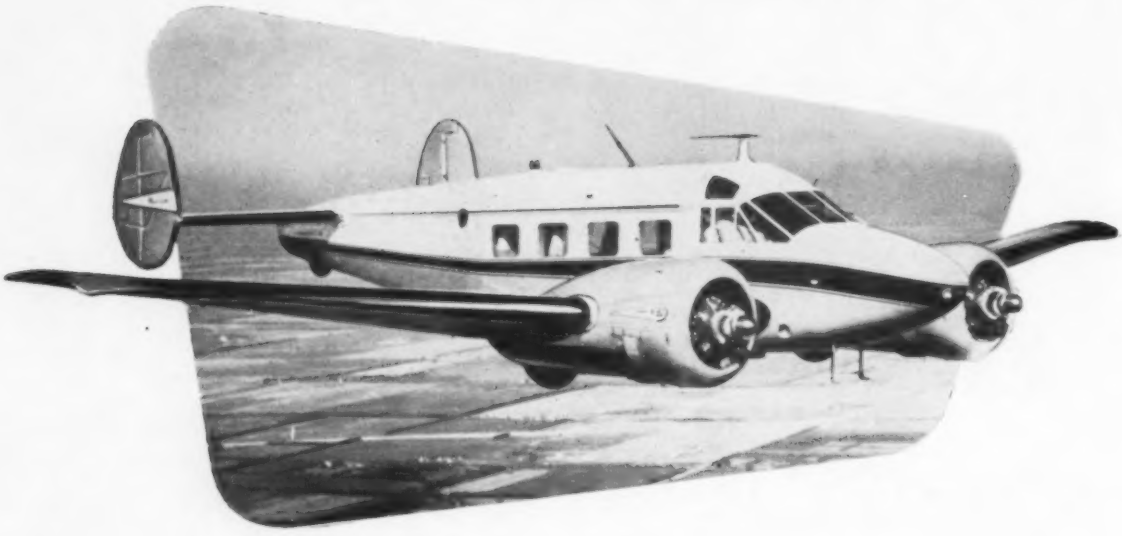

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Estimated Number of Spindles in Place, July 31, 1955
(000's omitted)

Continent	Spindles In Place	Spindles Being Erected		Cotton Spindles on Rayon
		a	b	
Europe	70,044	119	280	4,140
North America	24,660	51	3	1,621
Asia and Oceania	28,953	549	153	340
South America	5,211	78	15	78
Africa	970	147	5	34
TOTALS	129,838	944	456	6,213

a—As an increase
b—As a replacement of existing machinery

continents are given in an accompanying table.

High Production Claimed for Spanish Knitting Machine. Production of 18 square yards per hour on an electronically operated 30-inch circular knitting machine is claimed by Jumberca, machinery manufacturer of Badalona, Spain. The machine has 16 to 18 needles per inch, 24 feeds, a wheel-operated Jacquard mechanism, and 12 to 24 striping devices.

Teens Prefer Cotton. According to a recent survey by the U. S. Department of Agriculture, teenage girls rank cotton first in preference for summer skirts and dresses, winter and summer blouses, winter dresses for everyday wear, pajamas, shorts, slacks, sports jackets, and anklets. Wool

is preferred for winter skirts, dress-up dresses, and coats. Nylon ranked first for dress-length slips and stand-out petticoats. A preliminary summary of the survey, AMS-90, can be obtained from the Marketing Information Division, Agricultural Marketing Service, USDA, Washington 25, D. C.

Mill Electric Standards Near Completion. The recommended practices for electric installations in textile mills proposed by the textile subcommittee of the American Institute of Electrical Engineers have gone into their final revision, and will be submitted to the AIEE standards committee this summer. It is expected that they will be formally presented to the winter meeting of the AIEE in January, 1957.

Wool Fabrics Production Up. Production of woven wool fabrics for men's and boys' wear and women's and children's wear reached the highest level in 1955 since the Korean War, according to the Wool Bureau. Output of men's and boys' wear fabrics was 140 million yards, up 17 per cent over the 1954 figure; while production of women's and children's wear rose 11 per cent, to 149 million yards.

New Needle Loom Being Developed. A new needle loom with particular application to synthetic felts is under development by James Hunter Machine Co. It will be some time before the loom is available commercially, according to company officials.

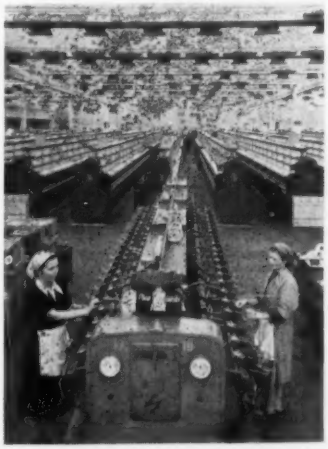
Federation Protests Classifying Cotton as "Flammable." The International Federation of Cotton and Allied Textile Industries has strongly protested to the Transport and Communications Commission of the United Nations the proposed new classification of raw cotton, cotton linters, and cotton waste as highly flammable goods subject to spontaneous combustion. The Federation claims that the proposed classification would have extremely harmful effects, particularly with regard to freight and insurance rates and to technical requirements of packaging and transport.

Conference on Labeling. The International Rayon and Synthetic Fibres Committee is sponsoring a three-day conference on "Fabric Quality and Informative Labeling" at Gothenburg, Sweden, October 1-3. American speakers will include J. B. Goldberg, consultant; E. Freedman, Macy's Bureau of Standards; and L. Leach, Du Pont Co.

News in Brief

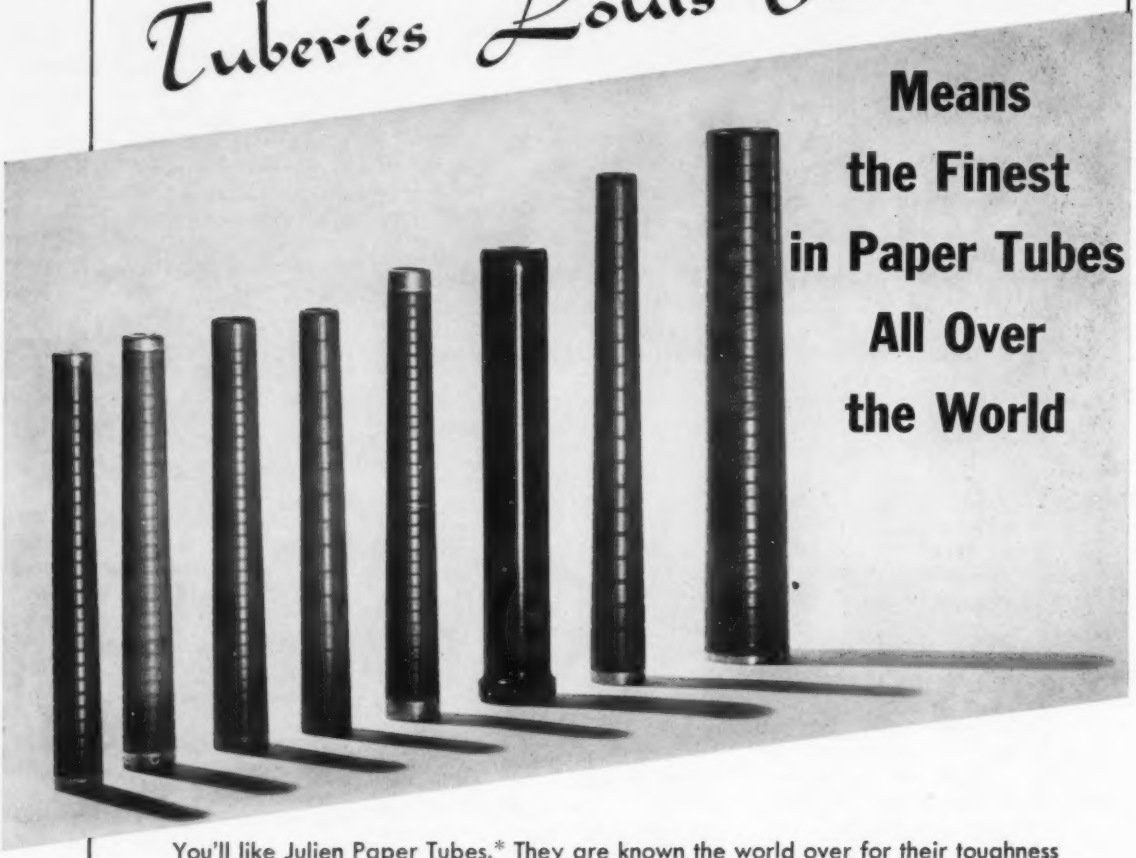
Fiber Results Available. The annual "Summary of Fiber and Spinning Test Results for Some Varieties of Cotton Grown By Selected Cotton Improvement Groups," published by the Agricultural Marketing Service of the U. S. Department of Agriculture, is now available for the crop of 1955. Copies are obtainable at 30 cents each from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Ask for Agriculture Information Bulletin No. 152.

Hosiery Imports Spurt. Imports of all types of hosiery during 1955 totaled 453,012 dozen pairs, up 18.3 per cent from 1954, according



COTTON SPINNING MILL in Andrychow, Poland, is part of a newly developed center for cotton textile production, according to the Polish Embassy in Washington. (The Embassy called this "a view of the thin-spinning spinning mill," presumably a mill for spinning fine yarns.)

Tuberies Louis Julien



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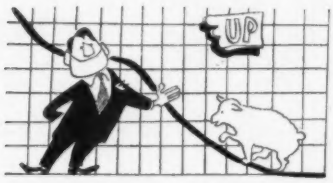
to the Department of Commerce. Cotton hosiery imports increased by only 3.4 per cent, but wool hose showed a rise of 16.4 per cent. The biggest increase, however, came in synthetic hosiery, which increased 279 per cent, from 4,383 dozen pairs in 1954 to 16,627 dozen pairs in 1955.

Hiring Office Personnel. Free copies of a six-page pamphlet, "How to Hire Office Personnel," are offered to mill executives who request it on their company letterhead from Martin Publishing Co., P. O. Box 2632, San Diego 12, Calif.

Wool Goods Production Up. Woolen and worsted fabric production during the fourth quarter of 1955 was 76.6 million finished



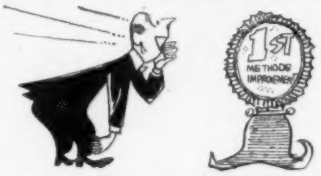
yards, according to the Bureau of the Census. This was one per cent above the third quarter 1955 output, and three per cent above the comparable period of 1954.

Bulletin on Warmth Available from LTI. A new technical bulletin, "The Effect of Certain Physical Characteristics of Fabrics on Heat Transmission," is available free from Lowell Technological Institute, Lowell, Mass.

Shrinkage of Knit Goods. Redman Process American Corp. has under development a new mechanical process for reducing shrinkage of knit goods to 1 per cent after laundering and screen drying, and 1½ to 3½ per cent after laundering and tumble drying, with plans to reduce the shrinkage after tumble drying to not more than 2 per cent. By the new method, six strands of fabric may be run simultaneously, instead of the usual single strand.

LTI Summer Session on Wool Yarn. Lowell Technological Institute will offer a summer session in woolen yarn from June 18 through June 29. The course is sponsored by the Davis & Furber Machine Co., which will pay the tuition fees. Qualified persons may obtain further information from Prof. Russell L. Brown, Lowell Technological Institute, Lowell, Mass.

Methods Improvement Contest Under Way. The Industrial Management Society is now accepting entries for its Fifth Annual Methods Improvement Contest to be conducted in conjunction with the



annual Time and Motion Study and Management Clinic in Chicago, October 31 and November 1-2. Prizes will be awarded to industrial plants and companies, and to industrial engineering student groups. Details may be obtained from the Society at 35 East Wacker Drive, Chicago 1, Ill.

Reiner to Offer F-F Sweater Machine. Robert Reiner, Inc., will soon offer a full-fashioned sweater machine for producing sweater and sleeve blanks with attached mock rib trims of high elasticity. The machine is said to eliminate separate knitting of the rib trim and the topping-on operation, and to operate at 45 courses per minute or faster.

Labor Notes. An El Paso, Texas, union local has been ordered by the National Labor Relations Board to refund all dues and assessments collected by it in the past year and a half from all employees covered by an illegal closed shop contract. . . . NLRB recently held that Glen Raven Knitting Mills committed an unfair labor practice by refusing a request for information, even though the Board itself did not know what information was involved. The union had made demands for style information, which the company refused to furnish. NLRB ruled against the mill, but was unable to draft a specific order directing the mill to comply, since the Trial Examiner didn't know exactly what information was demanded. Nevertheless, the Board

News in Brief

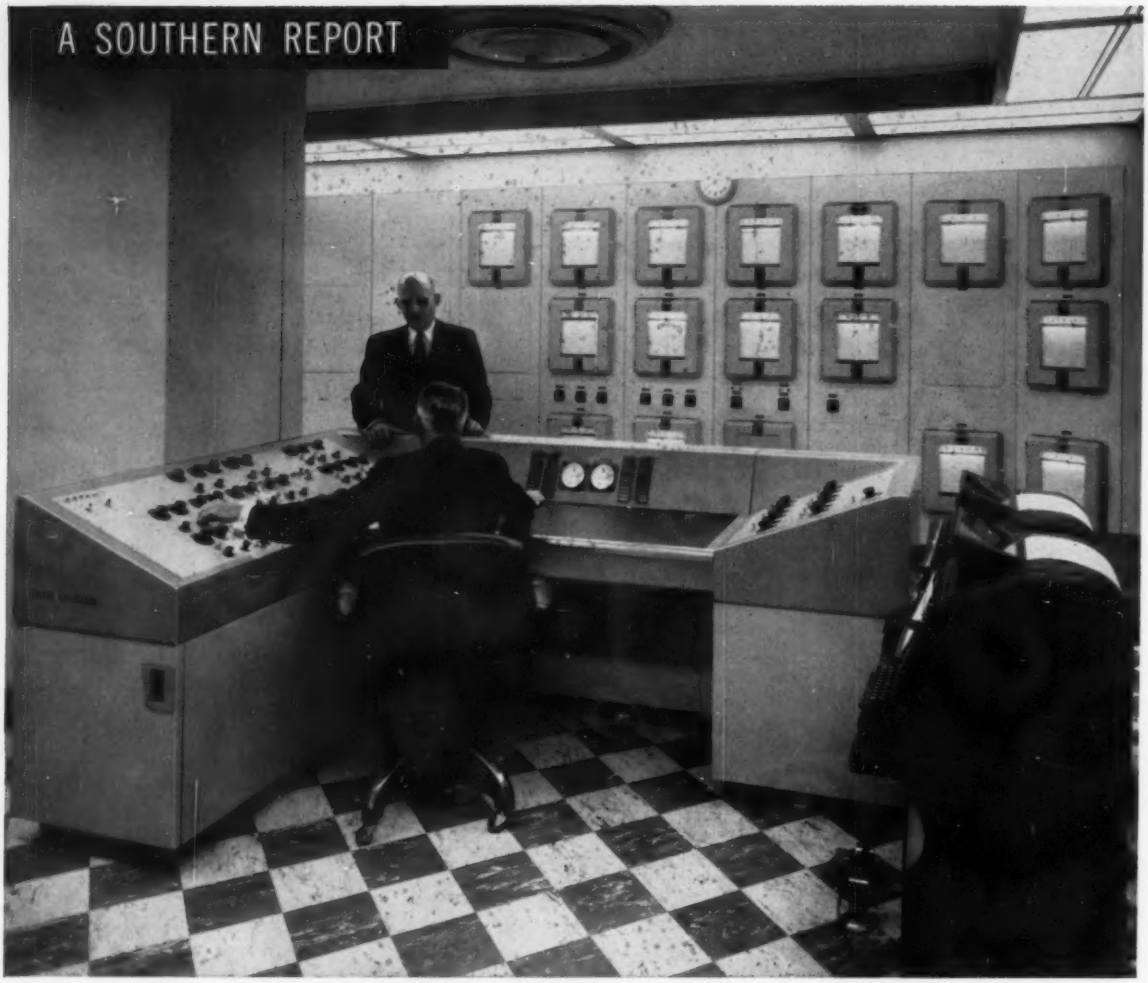
ordered the mill to "furnish the union the wage and related data relevant to wages requested by it." . . . The U. S. Supreme Court has ruled that the Taft-Hartley Act's 60-day cooling off period applies only to economic strikes, and does not bar a walk-out against unfair labor practices.—*NAM Law Department.*

Fiber Society to Meet with Textile Institute. A joint meeting of the Fiber Society and the Textile Institute (England) is planned for the fall of 1957, probably in the Boston area.

Man-Made Fibers Production at All-Time High. Total U. S. production of all man-made fibers in 1955 was at an all-time high of 1,718 million pounds, according to a recent issue of *Textile Organon.* This represented a gain of 20 per cent compared to 1954, and was 14½ per cent greater than the previous record year's output in 1951. Production of noncellulosic and textile glass fibers reached a figure of 457.5 million pounds last year, a new record and a gain of 33 per cent over 1954.

Continuous Printing of Circular Knit Fabrics. Knitella, Ltd., of Manchester, England, has filed patents in England and the United States for a machine which simultaneously prints three colors on both sides of a flat-folded circular knit fabric. The claim is made that accurate register of the pattern is obtained when the fabric is opened up. A prototype machine now in operation at Knitella's plant is printing at the rate of two yards per minute on 36-inch goods.

World Cotton Consumption. Cotton consumption throughout the world totaled 35.7 million running bales for the crop year ending July 31, 1955, according to an estimate by the International Federation of Cotton and Allied Textile Industries. The figure for the previous year was 35.6 million



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Shaded section designates area served by the four investor-owned electric power companies in The Southern Company system:

Alabama Power Company, Birmingham, Alabama
Georgia Power Company, Atlanta, Georgia
Gulf Power Company, Pensacola, Florida
Mississippi Power Company, Gulfport, Mississippi

Cotton and Staple Fiber Consumption, Year Ending July 31, 1955*

Continent	American Cotton	Total Cotton	Staple Fiber
Europe	2,242	12,232	247,012
North America	8,716	9,249	209,494
Asia and Oceania	1,367	11,843	29,718
South America	11	1,941	4,659
Africa	25	442	3,228
TOTALS	12,361	35,707	494,111

*Cotton figures are in thousands of running bales; staple fiber figures are in metric tons (2,205 pounds).

bales. The figures include 12.4 million bales of American cotton for the year ending 1955, and 12.1 million bales for the year ending 1954. Consumption figures for the various continents are given in an accompanying table.

Cotton Standards Conference. The USDA has announced that the 11th International Cotton Standards Conference will be held in Washington, D. C., on May 21, for the purpose of examining and approving sets of copies of the Universal Cotton Standards prepared by the USDA under the Cotton Standards Act. The conference will also consider physical standards for spotted cotton, a descriptive standard for Strict Good Middling cotton, and other topics.

Hosiery Inventories Low. Contrary to expectations, mill inventories of hosiery were at the lowest point since the end of World War II on March 1, when the increased minimum wage became effective. For this reason, there will be very little lag between increased costs to the mill and increased costs to the consumer. — *Hosiery News Letter.*

News in Brief

Council to Meet in St. Louis. The 19th annual meeting of the National Cotton Council will be

held January 28-29, 1957, in St. Louis, Mo. The 1958 session will be held in Phoenix, Ariz.

Synthetics Production Climbs. Production of synthetic and silk broad woven goods was 662 million linear yards during the fourth quarter of 1955, according to the Bureau of the Census. This was seven per cent above the third quarter of 1955.

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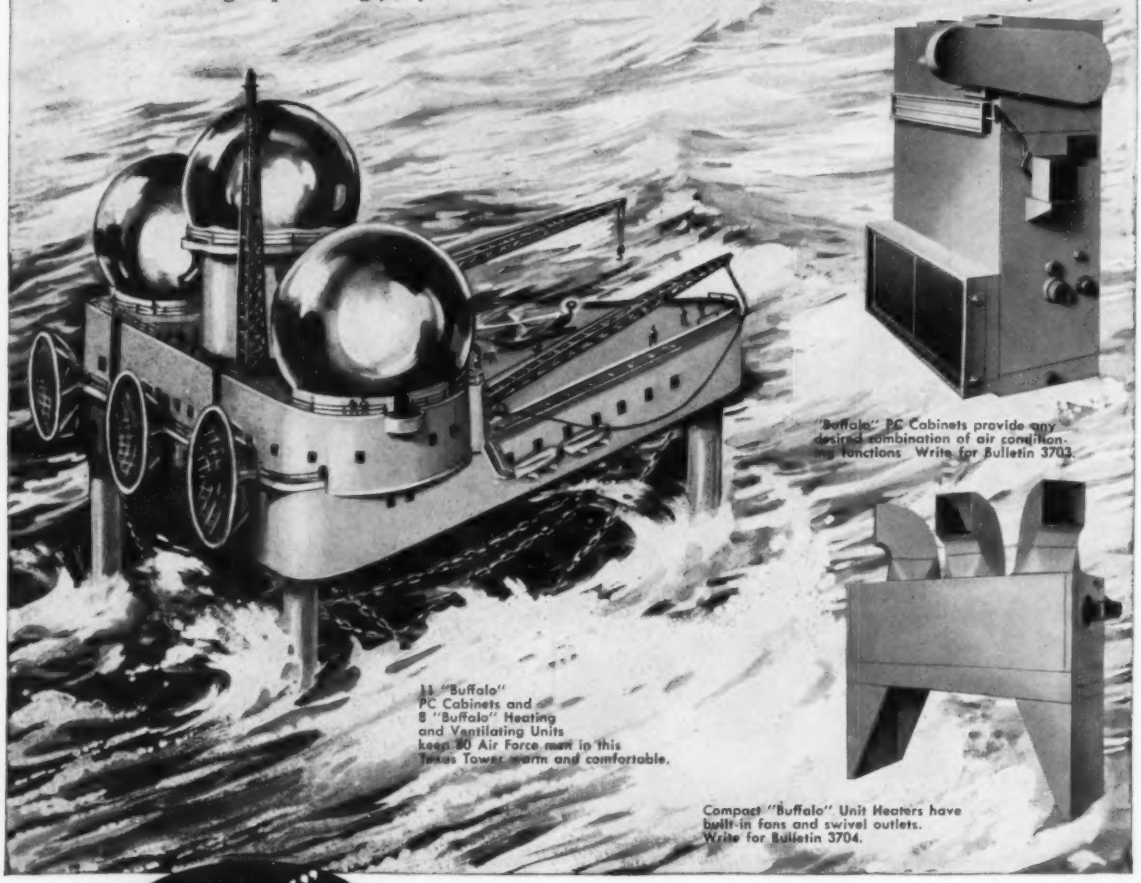

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Three Methods of Measuring Salt—and Their Effects on Brine Uniformity

One of the most important factors in maintaining brine strength at consistently uniform levels is salt measurement. When measurement is inaccurate, brine may be weakened excessively or become too strong. But, when salt is measured accurately, variations in brine strength are virtually eliminated . . . brine production costs are reduced . . . and product quality remains high.

Today, there are three methods commonly used to measure salt in industry. While all of these have certain merits, only one method is completely accurate—measuring salt quantity in the form of saturated brine. A look at the other two methods will show why they are not entirely reliable.

Measurement by dry salt volume. This method presents a number of difficulties. First, moisture content of salt can greatly affect its volume. And humidity changes alter this moisture content to a considerable degree. Degree of compaction makes a big difference in volume, too. A pailful of salt

may vary from 25 to 35 lb. (a 40% margin of error) depending on storage conditions, or length of storage. Both moisture content and compaction will change, not only from one day to the next—but also from one batch of salt to another.

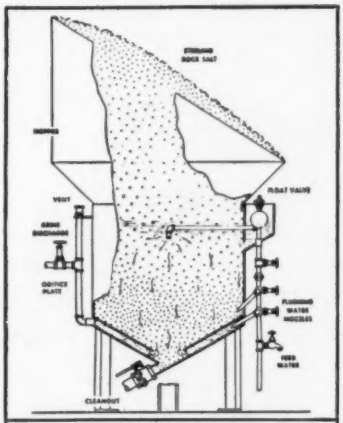
Measuring by dry salt weight. This method is somewhat more reliable, but is still far from accurate. When the scale reads 100 lb., it can never be estimated how much of that weight is

moisture—one pound or ten. And again, the moisture content of salt varies constantly with air humidity, and humidity of storage areas. When salt is measured this way, control over brine strength is never exact.

Measurement by the saturated brine method. This is effective in every industrial application. It depends, of course, on fully saturated, crystal-clear brine, free from any undissolved solids. One gallon of such brine always contains 2.65 lb. of salt (if dissolution water temperature is within the range found in most plants). By starting with this accurate fixed unit of salt measurement, brine strength can be completely controlled. Whatever strength is desired—the dilution of fully saturated brine with a certain amount of water produces it quickly and accurately.

One of the best ways to get the fully saturated brine essential to this measuring method is with a Lixate Rock Salt dissolver. This device—originated by International—automatically produces clear, fully saturated brine from Sterling Rock Salt. In fact, development of the Lixator made possible accurate salt measurement.

Regulating brine strength with the Lixator: Water is run into storage tank



The Sterling Lixator reduces salt-handling, brine-making and brine-distributing costs. Savings between 10% and 20% on salt used are possible, too.

up to a specified mark. Lixate Brine is then added to bring the volume up to another mark. The mixture of water and Lixate Brine will give the exact strength of dilute brine needed—as well as the correct volume.

This method of salt measurement and brine control, of course, does more than protect product quality. It also provides substantial savings in time and labor—since the entire Sterling Lixator operation is fully automatic.

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Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt you use. International produces both Sterling Evaporated and Sterling Rock Salt in all grades. We also make automatic dissolvers in metal or plastic for both types of salt. So we can suggest the type and grade of salt most perfectly suited to your needs.

If you'd like help on any problem concerning salt or brine—or further information on salt measurement—contact your nearest International sales office.

International Salt Co., Scranton, Pa.
Sales offices: Atlanta, Chicago, New Orleans, Baltimore, Boston, Detroit, St. Louis, Newark, Buffalo, New York, Cincinnati, Cleveland, Philadelphia, Pittsburgh, Richmond.

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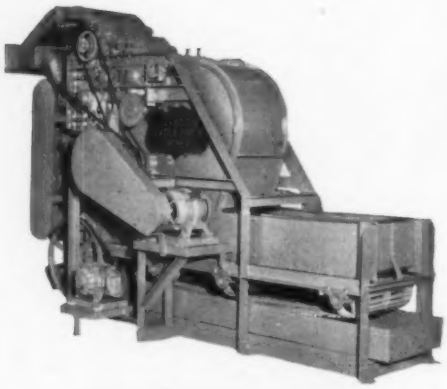
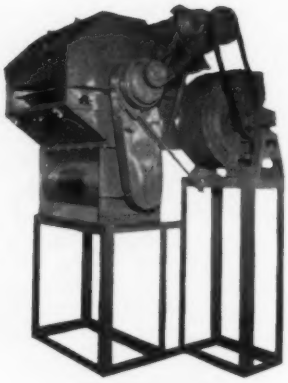


CEN-TENNIAL TEXTILE FIBER OPENER



CEN-TENNIAL TEXTILE SEPARATOR

THE FOLLOWING EQUIPMENT IS USED: (1) Feeders for Proportioning. (2) AERATORS for Pre-opening and Blooming. (3) Pneumatic Conveyor. (4) CEN-TENNIAL TEXTILE FIBER OPENER. (5) CEN-TENNIAL TEXTILE SEPARATOR.

SEQUENCE OF OPERATION:

The stock is fed into the feeders to get optimum proportion of the mix. The AERATORS receive the stock from the feeders and partially open and bloom it. A large amount of heavy and light trash is removed by these machines.

The stock is deposited in the pneumatic conveyor by the AERATORS and is delivered to the CEN-TENNIAL TEXTILE FIBER OPENER. The Opener completely separates the fibers, removes all the residual heavy trash, and perfectly blends the stock.

The resulting mass of opened and blended stock is drawn from the Opener by the CEN-TENNIAL TEXTILE SEPARATOR. The Separator, as its name implies, separates most of the remaining light trash from the stock. This is accomplished by the large, stationary screen through which the trash and dust is drawn. There is no mechanical counter-action to cause rolling or stringing. Tests have shown that the Separator removes more than twice as much pepper trash as any other machine used for this purpose.

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AN EXECUTIVE Views

THE NEWS IN TEXTILES

Prepared by a man who is closely identified with the textile industry.

To See Or Not To See

IN THE rolling hills of North Carolina there is located a manufacturing enterprise known as Truitt Manufacturing Company. Although a part of the iron and steel industry, some of the things which have been happening to this company of late are of more than passing interest to the textile mills. We commented on this matter many months ago, but we would now like to bring you up to date on the current situation.

Our reason for singling out this case for comment is that an adverse decision would be the first of its kind in this country and would constitute a major victory for the socialists.

Like many another company before it, Truitt was faced with a wage demand by the union. At no point does there seem to be any evidence that the company failed to bargain in good faith; but, on the contrary, everything we have seen indicates that company representatives approached each meeting with an open mind and with a sincere desire to work out some sort of an agreement.

However, when the company refused to grant a 10¢ an hour wage increase, indicating that it was "unable" to pay this, the union demanded to see the company's books to ascertain for itself whether or not Truitt was "unable" to pay a 10¢ an hour increase. When the company refused to disclose its financial records, the union filed an unfair labor charge and the case was off to the races.

The National Labor Relations Board ruled that the company had refused to bargain in good faith and brought the matter to the U. S. Court of Appeals for the Fourth Circuit in an attempt to enforce its order. This Court found in favor of the company, the unanimous decision reading, in part:

> "We feel sure that it never was intended that the employer be required to disclose such information to its employees as an incident of collective bargaining; and we feel equally sure that Congress never would have passed a statute which it thought could have been given such interpretation."

The case has now gone to the U. S. Supreme Court for final determination; and if the ruling of the lower court is overturned, we have indeed come to a sorry end.

The question that the Supreme Court is being asked to decide is simply this: If an employer bargains in good faith, but refuses to open his financial records to the union, is he in violation of the National Labor Relations Act? If the answer to that question is "yes," then it means that the free enterprise system has been struck a telling blow. If the National Labor Relations Board can force an employer to prove by his financial records that he is "unable" to pay more wages, then what is to keep the Board (or some other governmental agency) from forcing each employee to prove that he "needs" a wage increase?

Aside from the basic and fundamental questions involved here, there is also the subsidiary, but very practical, consideration that disclosure of financial data would wreak havoc with the competitive relationship between companies. Not much competition would remain if each company had available to it the details of its neighbors' cost structure and other financial plums.

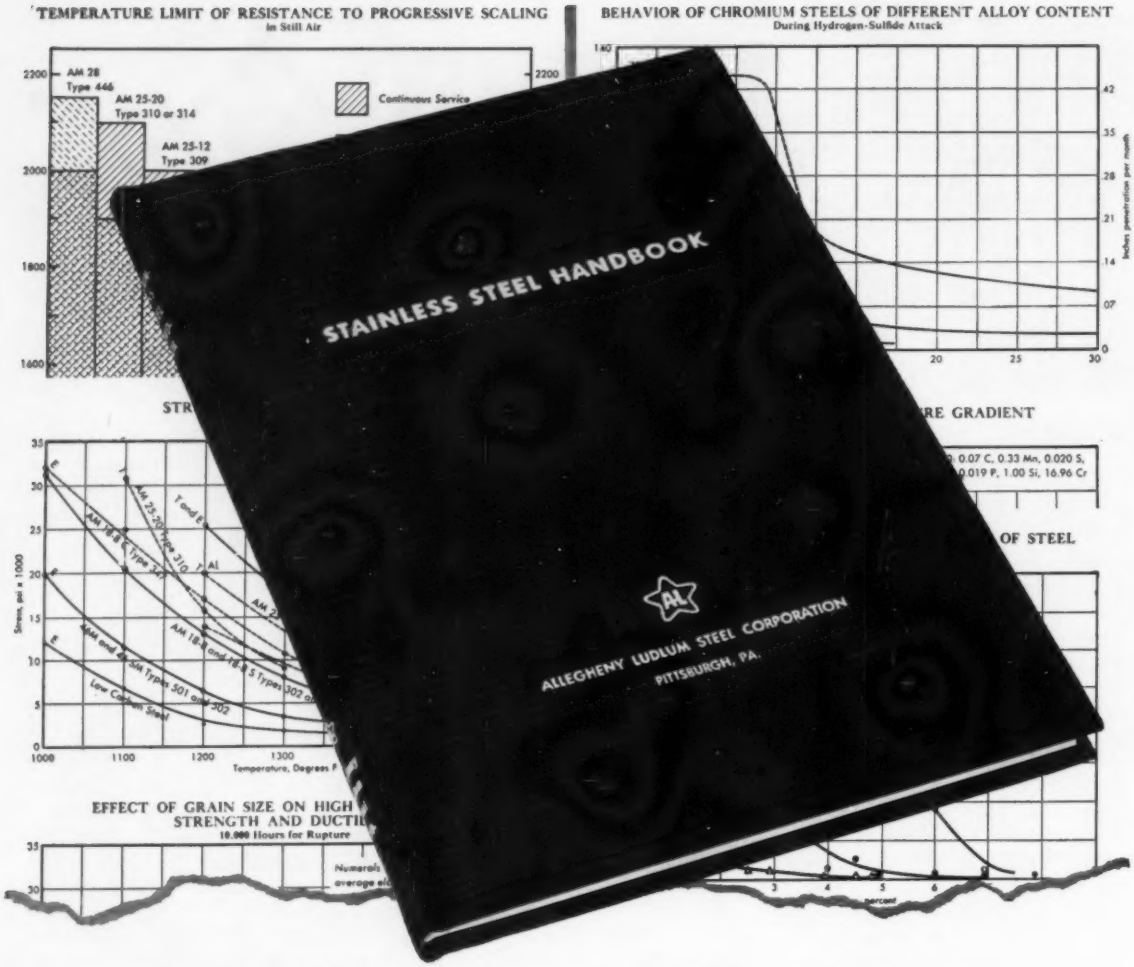
Prospects are that the decision of the Supreme Court may not be forthcoming for several months, but its ruling will be of interest to the entire country.

OTC

This columnist makes no claim for necromancy, but he would like it pointed out for the record that several years ago, in this same space, he called attention to the trial balloons which were going up from behind Washington's cherry trees prefacing a full scale attempt to shackle the United States into an Organization for Trade Cooperation. We pointed out at that time that the OTC was merely a United Nations for Foreign Trade, and that it would be a sorry day when the United States got involved in any such shenanigans.

The time we feared has now arrived. A bill introduced earlier—HR 5550—is being debated with great heat and fervor. The debate, like the music, goes round and round, and where it will stop nobody knows.

Of one thing we can be sure, however, and that is that if we are in a deplorable state now because of the mishandling of the Japanese situation by our administrative agencies, we would be a hundred times worse off if our fate were to be determined in the tribunals of some thirty or forty nations. Instead of running to Washington to try to get help on quotas, it would be necessary for us to go to Geneva; and, after we had made our case in Geneva, the decision would be left up to a council weighted overwhelmingly with the



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"have not" nations of the world.

Within recent weeks, two outstanding witnesses have appeared before the House Committee on Ways and Means to oppose the Organization for Trade Cooperation. Roger Milliken, president of Deering, Milliken & Company, said: "Such an examination leaves us no conclusion but the certain knowledge that HR 5550, if enacted, would invite and practically assure, the eventual destruction of the textile industries of the United States." Spencer Love, chairman of the board, Burlington Industries, Inc., said: "Passage of HR 5550, authorizing OTC and thus perpetuating GATT, would further undermine investor confidence in the future of the American textile industry and destroy thousands of jobs."

Of perhaps as much importance as the testimony of these two gentlemen was the fact that both of them appeared on behalf of the National Council of Textile Industries, which is a rather loosely constructed organization representing the American Cotton Manufacturers Institute, National Federation of Textiles, and the National Association of Wool Manufacturers. The testimony before the House Ways and Means Committee marked the first time that a spokesman appeared on behalf of the National Council.

Does this fact bring closer the possible amalgamation of some, or all, of these associations?

Japanese Trade Up

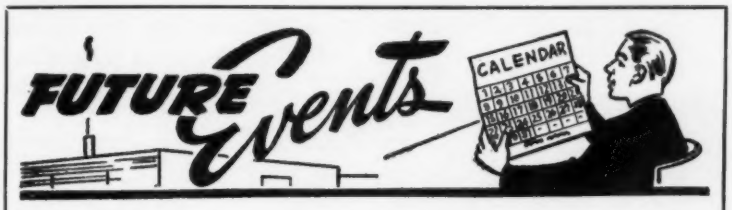
The Overseas Edition of a Japanese newspaper points out that American business prosperity has stimulated Japan's export trade to a point where 1955 established a postwar high with an increase of nearly 25% over 1954. The exact figure was 24.7%. Exports to the United States, says the Japanese writer, showed "a remarkable advance," increasing as much as 74% over 1954.

Also of interest is the fact that dollar exports will come to approximately $880 million, of which exports to the United States will account for about $510 million.

The bold, black headline over one of the stories does little to reassure us. We quote it below:

Trade in '56 will keep on growing; U. S. will be major market for export

They haven't told us anything we didn't already know, but such headlines do tend to aggravate our anxiety neurosis.



Date		Event	Location
May	2-3	The Fiber Society, Inc.	Clemson House Clemson, S. C.
	2-4	North Carolina Industrial Safety Conference	Hotel Charlotte Charlotte, N. C.
	4	The Underwear Institute annual convention	Hotel Roosevelt New York City
	5	Mid-West Section AATCC	Plankington Hotel Milwaukee, Wis.
	11	Western New England Section AATCC	Waverly Inn Cheshire, Conn.
	14-19	National Cotton Week, sponsored by National Cotton Council	
May	18	Carders' Guild National Association of Woolen & Worsted Overseers	Hotel Bancroft Worcester, Mass.
	18	New York Section AATCC	Kohler's Swiss Chalet Rochelle Park, N. J.
	18-25	Southeastern International Industrial Exhibition	Lakewood Park Atlanta, Ga.
	25	Philadelphia Section AATCC annual outing	Huntingdon Valley Country Club Abingdon, Pa.
	25	Rhode Island Section AATCC ladies' night	Sheraton Biltmore Providence, R. I.
	31-June 2	Tufted Textile Manufacturers Association convention	The Fontainbleau Miami Beach, Fla.
	31-June 2	South Carolina Textile Manufacturers Association convention	The Cloister Sea Island, Ga.
June	5-7	Textile Seminar sponsored by Textile Technical Federation of Canada	Queens University Kingston, Ontario
	8-9	Piedmont Section AATCC annual outing	Mayview Manor Blowing Rock, N. C.
	8-9	Southeastern Section AATCC annual outing	Radium Springs Albany, Ga.
	14-16	National Association of Hosiery Manufacturers annual meeting; also Hosiery Industry Conference	Hotel Roanoke Roanoke, Va.
	17-20	ASTM Annual Meet and Apparatus Exhibit	Chalfonte-Haddon Hall Atlantic City, N. J.
	21-23	Southern Textile Association annual convention	Mayview Manor Blowing Rock, N. C.
	21-23	South Central Section AATCC annual outing	Lookout Mountain Hotel Chattanooga, Tenn.
Sept.	6-7	The Fiber Society, Inc.	The Warwick Hotel New York City
	10-15	Perkin Centennial	Waldorf-Astoria New York City
	12-15	American Association of Textile Chemists and Colorists annual convention	Waldorf-Astoria New York City
	27-28	Combed Yarn Spinners Association convention	Cavalier Hotel Virginia Beach, Va.
Sept.	27-28	Northern Textile Association and National Association of Cotton Manufacturers annual meeting	Wentworth By-The-Sea Portsmouth, N. H.
	28	Northern New England Section AATCC annual outing	Waschusett Country Club West Boylston, Mass.
Oct.	1-5	Southern Textile Exposition	Textile Hall Greenville, S. C.
	10-13	North Carolina Textile Manufacturers Association annual meeting	The Carolina Pinehurst, N. C.
	13	Georgia Slashing, Weaving, and Maintenance Discussion (TOE)	Georgia Tech Atlanta, Ga.
	17-27	International Knitting Machinery & Accessories Exhibition	Granby Halls Leicester, England
Oct.	18-19	Southern Textile Methods and Standards Association	Clemson House Clemson, S. C.
	27	Alabama Textile Operating Executives fall meeting	Thach Auditorium Auburn, Ala.

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to take advantage of large package spinning, more yarn on filling bobbins, more uniform bunches, better weaving bobbins, and inspected yarn, all of which go to make a better fabric.

Abbott Traveling Spindle Package Winders

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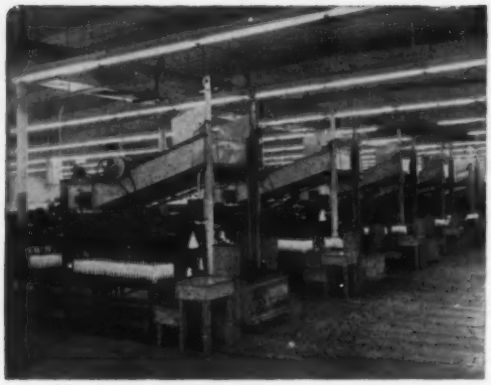
Can be equipped with any one of a variety of slub catchers and inspection devices.

Production up to 1000 bobbins per hour per operator.



Abbott Traveling Spindle Automatic Quillers

For winding cotton, spun rayon, worsted, etc., equipped to doff automatically into baskets, or stack automatically into boxes.

For rewinding woolen yarn from mule and ring frames.

For winding filament rayon and nylon, etc., with automatic pinboard attachment or wide belt inspection conveyor.

Production up to 2500 bobbins per hour per operator.

Abbott Fully Automatic Radial Quiller

For smaller lots and widely diversified mills.

For winding cotton, spun rayon, filament rayon, worsted, wool, etc.

Can be arranged to deliver bobbins to Pinboard Attachment, or into baskets, or into wide belt conveyor.

One operator can run several machines producing up to 2000 bobbins per hour per operator.

Can be equipped with measured yardage device for two-shuttle looms.

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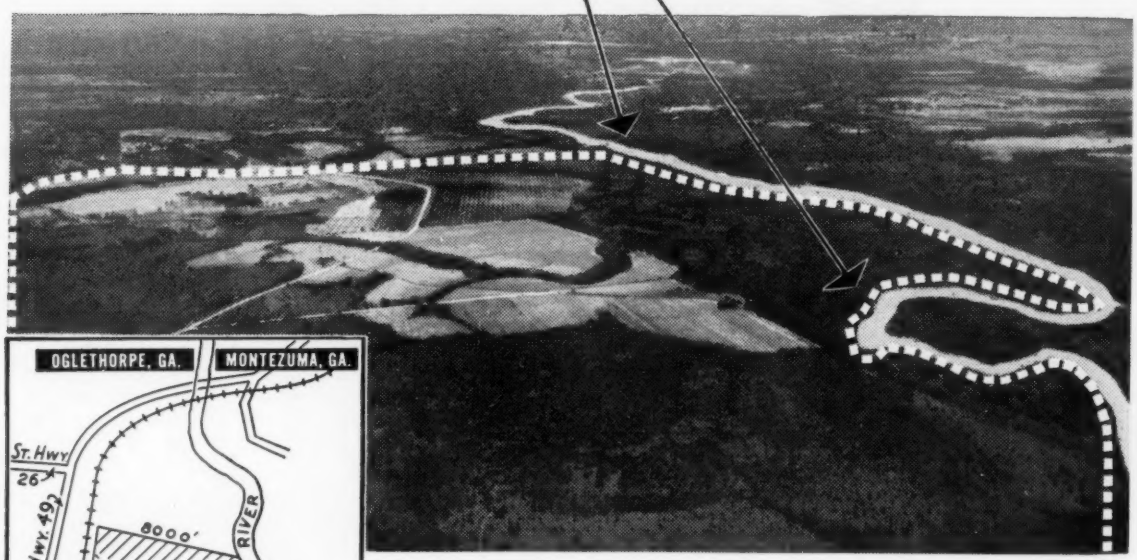

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- **Also ample underground water supply.**
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- **Paved road from State Highway 49 to plant site will be provided.**
- **Population within 25-mile radius is 76,926.**

WATER—378,000,000 gallons a day for production and processing . . . plus many other industrial advantages . . . make this an ideal site for your new textile plant!

And it's smack in the center of the Southeast's ever-growing 22-million consumer market. Your products will reach any corner of this booming area via Central of Georgia's safe, dependable freight service.

You can draw immediately upon a large reservoir of manpower—willing, intelligent workers who *already* possess skill in textile operations.

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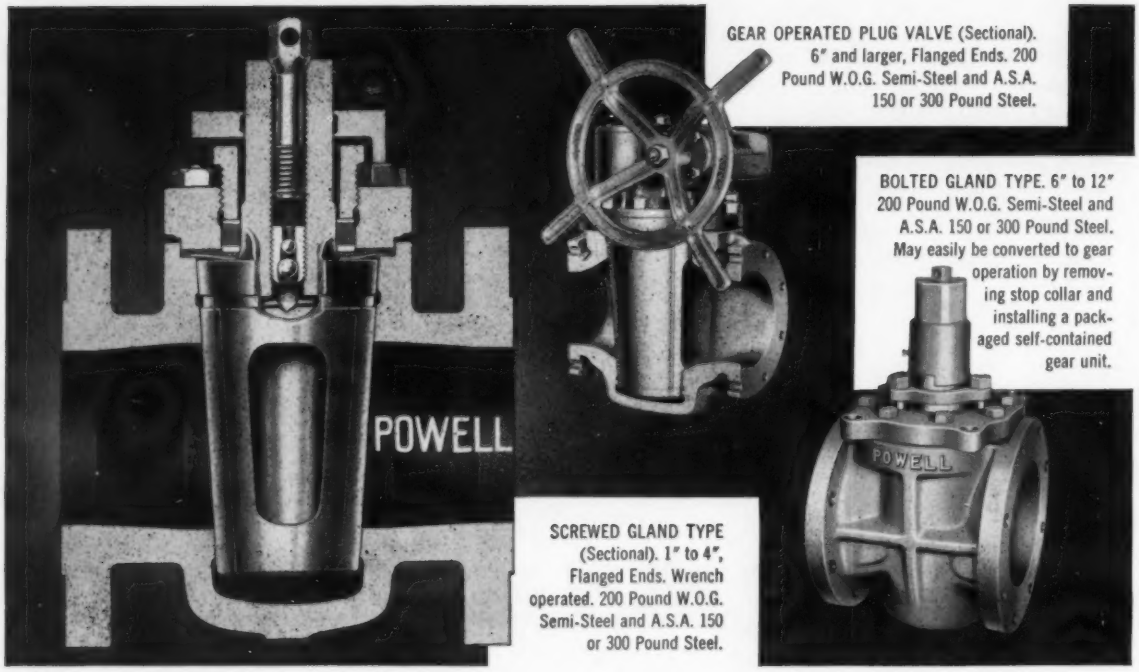

GEAR OPERATED PLUG VALVE (Sectional). 6" and larger, Flanged Ends. 200 Pound W.O.G. Semi-Steel and A.S.A. 150 or 300 Pound Steel.

BOLTED GLAND TYPE. 6" to 12" 200 Pound W.O.G. Semi-Steel and A.S.A. 150 or 300 Pound Steel. May easily be converted to gear operation by removing stop collar and installing a packaged self-contained gear unit.

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Powell Lubricated Plug Valves maintain our 110-year tradition of quality and precision. Only the finest available materials are used. And painstaking quality control is rigidly enforced through each and every step of manufacture.

Features include quick and positive operation—just a quarter-turn to open or close. Lubricant grooves surrounding each port provide a positive seal when the valve is closed. In an open position, seating surfaces are not exposed.

Valve users who want one source of supply for lubricated plug as well as all types of bronze, iron, steel and corrosion-resistant valves will want full details on Powell Lubricated Plug Valves.

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Textile Industries *presents:*

the first article of a new series

Warp Sizing

BY PAUL V. SEYDEL, D. Sc.
Seydel-Woolley & Co.
EXCLUSIVE

Many readers of TEXTILE INDUSTRIES as far back as 1946 will recall the series of articles entitled "Cotton Warp Sizing," by Dr. Paul V. Seydel. So great was the demand for reprints that the entire series was reproduced in the book "Cotton Slashing" which was published in 1949 by W. R. C. Smith Publishing Co. and is now out of print because of its wide acceptance by textile industry personnel.

Publication of a second edition of the book so soon was not originally intended; however, the rapidly diminishing supply of books made consideration of this necessary.

In contemplating revision, it was felt that the book would be of more service to the textile industry if it were written to include fibers other than cotton. At the same time, it was realized that considerable size preparation and application equipment had been perfected since the original series was written and this certainly should be included in any text expected to be of value to the practical slasher man.

With these objectives in mind, Dr. Seydel completely revised his original work, and in this issue publication of the new series begins. Since the many helpful pointers and discussions of all phases of the warp sizing operation contained in it are applicable not only to cotton but to filament and spun type man-made yarns as well, the all-inclusive title "Warp Sizing" was chosen for these articles.

It is expected that when the entire series has been published in this magazine, it will again be reprinted in book form. Many, however, will want to save the individual installments as a ready reference library on the subject.—The Editors.

ARTICLE 1—Introduction

Purpose of Sizing. The Ideal Size. Action of the Size. Importance of Sizing. Types of Mixes.

MUCH has been written on the subject of warp sizing in the past. But like any other subject of a technical or scientific nature, it is highly desirable to keep the literature up to date with the advances made in the laboratory and in industry.

The present discussion is based to some extent on the series of articles written by Paul B. Seydel entitled "Warp Sizing." The series appeared in COTTON magazine in 1935 and 1936.

This series is a revision of the articles published in TEXTILE INDUSTRIES in 1946-'49.

Cognizance also has been taken of several hundred articles on sizing and related subjects published during the past decades, both in the United States and abroad. Reference has been made to some twenty books written on the subject in America, England, France, and Germany.

However, anyone who keeps up with such subjects quickly observes that there is a great deal of contradictory matter to be found, not only in different articles, but often in the same article. One begins to agree with Josh Billings, when he said "Books are full of things that are not so."

For this reason, as much as possible of the present treatise has been based on the experience of the author, and of those associated with him. The present discussion is based, therefore, not only on the recognized literature, but also on the actual experience of a number of specialists in the manufacture and application of warp sizing

About the Author of "Warp Sizing"

Dr. Paul V. Seydel is vice-president of Seydel-Woolley & Co., Atlanta, Ga.

For several years he was chief chemist and director of research for the company, and in this capacity spent much time visiting mills, mostly on trouble-shooting problems connected with the warp sizing operation.

Dr. Seydel's most recent contribution to his firm was development of the finishing chemicals division which manufactures textile wet processing auxiliaries for dyeing, bleaching, finishing, and mercerizing.

Upon receiving his bachelor and master of science degrees from the Georgia Institute of Technology, he attended the Federal Polytechnic Institute in Zurich, Switzerland, and there obtained his doctor of science degree in 1941.

Dr. Seydel follows textile developments and processing in foreign countries through his knowledge of the German, French, Swiss-German (dialect), Spanish, Dutch, Italian, and Russian languages.

He has traveled to many inaccessible parts of the world, including the upper Amazon and the Arctic Regions, in pursuit of his avocation of exploring. Dr. Seydel is a member of the Explorers Club.

Dr. Seydel

during the last half century.

An attempt has been made to make this work sufficiently nontechnical to be understood by the average layman, and at the same time sufficiently technical to be more than a simple discussion—to have some value as a ready library reference on the subject. This attempt to hold a middle path will bring criticism from both sides, but if it is of interest and useful, it will have served its purpose.

Contents of Series. This series of articles will cover the following subjects: the purpose and importance of sizing; a description of the materials to be sized, cotton and rayon; the sizing materials (starches, gums, glues, lubricants and softeners, preservatives, deliquescents, water, and other chemicals); testing and analysis of materials; the sizing process (the size mix, equipment, controls, and the operation itself); slashing hints; and the sized material (properties of a well-sized warp, testing and analysis, weaving defects and their remedies).

In order to get the most out of any description of sizing or sizing materials, we must always keep foremost in our minds just what the purpose of sizing is. Thus we have a yardstick by which we can judge the qualifications of any material or process.

The primary purpose of warp sizing is to produce weavability in the warp. No matter what other properties slashing may give to the yarns, as feel (hand), stiffness, tensile strength, or weight, if these are done at the expense of weavability, the sizing has not served its purpose.

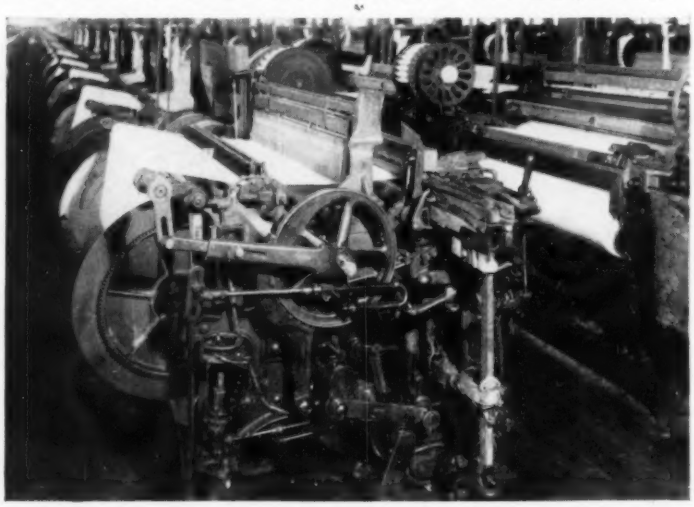
Certain of these qualities contribute to the weavability of the warp, but if they are carried too far, they may decrease it, rather than improve it.

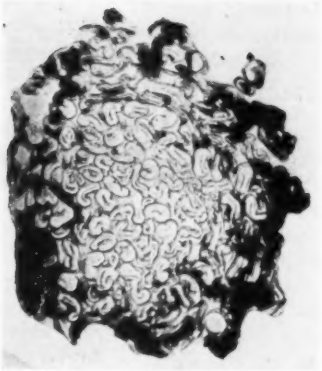
As yet, there has been no successful attempt to judge how a warp will weave by testing any one of the properties of the yarn. Certain work being carried out, notably by the Textile Research Institute among others, promises to be able to give some indications of how the warp will behave in a weave room by correlating a number of different properties of the yarn which may be tested in the laboratory. Yet even this work, with its complicated relationships of many properties, will not always give an accurate picture of weave room performance.

More recently, several types of tests, depending principally on testing the abrasion resistance of the sized yarns, have laid claim to being able to give indications of weavability, and some have claimed nearly quantitative results. Work has been reported from several mill groups, and from the Southern Research Institute, as well as in textile institute laboratories in both Belgium and France. There have been no reports of confirmation of any of these methods outside of the originator's laboratories, each investigator seeming to prefer to work out new methods of his own. It would certainly be of service to the science of slashing if some organization with a cooperative weave room would compare these methods.

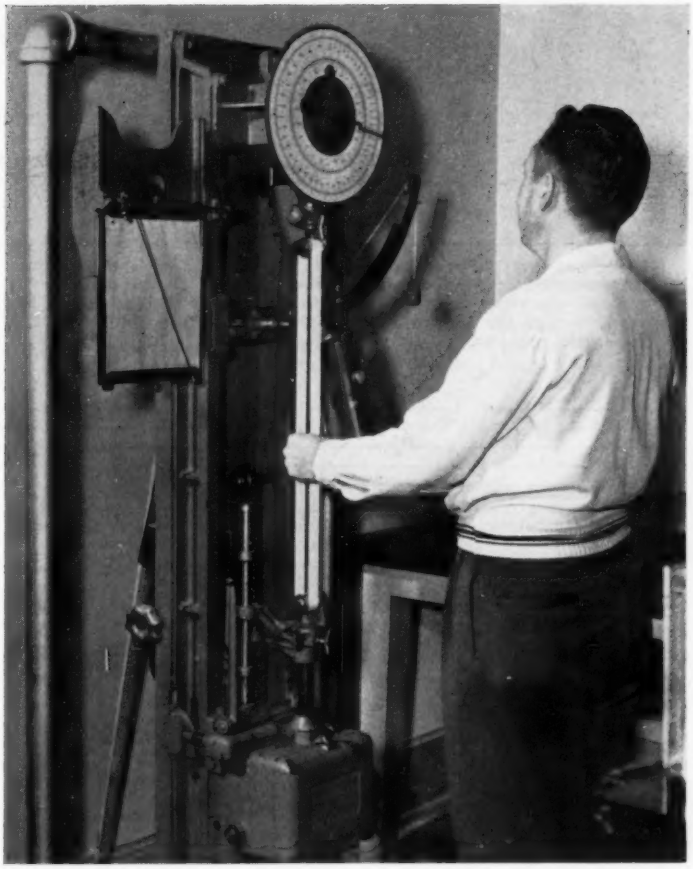
Although the fact that slashing comes at the stage it does in textile processing should make it obvious that it is not intended to produce an effect on the finished cloth (except for certain types of

The primary purpose of warp sizing is to produce weavability in warp.





Cross section of sized yarns, revealing normal penetration of size film. Starch film has been stained with iodine to show dark. More penetration than shown would give a stiff, inflexible, rod-like yarn. Magnification about 210 X.



The increase in tensile strength and change of elasticity of the yarns, resulting from sizing, may be checked with the Scott tester.

"loom finished" goods), sometimes the way a cloth is marketed will require that the superintendent pay more attention to the feel and the tensile strength, than if the mill did its own finishing.

If in doing this he does not also keep the primary purpose of slashing in mind, he may find that he is losing more in his weave room through loss of production than he is gaining by having paid attention to the more obvious surface characteristics of the goods.

Within certain limits, the characteristics of the warp may be varied without materially detracting from its weavability. As long as these limits are not overstepped the superintendent may adjust his size to fulfill its secondary purposes—that is, producing a certain hand, addition of weight, increase of tensile strength, or wetting ability. He must not, however, lose sight of the fact that his real reason for sizing is to keep up production in weaving.

The "Ideal" Size. The ideal size should leave the desired weight on the cloth, give it the proper hand, and at the same time eliminate warp breaks during weaving. Defects in the warp such as knots, crossed ends, slubs, weak spots, etc., which come in the normal variation of textile production, must be covered up as far as possible by the size film which gives increased strength, fiber lay, and resistance to abrasion.

In order for a size to approach the ideal, it should have the following qualities:

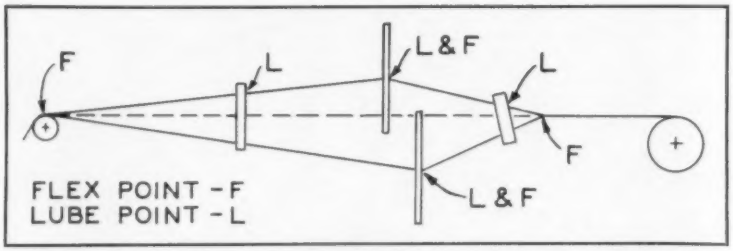
Strength. The tensile strength of the yarn must be increased by the cementing action of the size film, as well as by the addition of the strength of the film itself.

Penetration. Penetration of the size into the yarn must be properly controlled. Penetration should not be too complete, otherwise the yarn will become more like a stiff rod, losing the flexibility which is necessary for good weaving (see accompanying illustration).

This is better understood by comparison with the pneumatic tires of an automobile, which withstand wear and shock much better because of their much greater ability to yield when struck. A solid tire, and likewise a solidly sized yarn, does not have this cushioning effect to offset the action of blows and abrasion. At the same time, there must be sufficient penetration to anchor the size film firmly to the yarn, or shedding may result.

Elasticity. The size must be sufficiently elastic to allow the warp to stretch and return to practically its original length, otherwise the beat of the reed in pushing the filling pick into the fell of the cloth will break the warp ends. Elongation should not be reduced more than 20-25 per cent by the sizing process.

Flexibility. The property of flexibility is particularly important in weaving. The sized yarns must be able to take all the bending given



While weaving, the yarn must be flexible and lubricated to withstand the operation of the loom; these qualities must be imparted to the yarn by the warp size. This simplified sketch of the passage of the yarn through the loom indicates points where yarn if flexible and lubricated can improve weaving production.

The size film must hold filament fibers strongly to the yarn to prevent their stripping back and gathering along the yarn as fuzz-balls.

at the rate of operation of the modern high-speed looms, without damage to the size film. Breakage of the size film will cause increased friction, as well as shedding. Often the lack of flexibility of starch sizes is a result of over-drying, or baking on the slasher cylinders.

Adhesion. Lack of adhesion in the size will not only allow the size film to scale off the yarn, but adhesion is necessary to lay the fiber ends along the yarn and hold them there (see illustration).

Lubrication. The size should either by its own action or by modification or blending with the natural cotton waxes, furnish a lubricating effect so that the fibers will slide more easily by the surfaces of the reed, drop wires, and heddles, and each other, decreasing not only tendency to yarn breakage, but also the wear on the loom parts.

Hygroscopicity. Ingredients in the size which attract moisture will allow the running of the weave room at lower humidities, which will be more comfortable to the weavers and easier on the machinery. Care must be taken not to have the yarns too hygroscopic, or soft warps may result, with their attendant difficulties.

Film-Forming. The size should form a smooth continuous film, thick enough to hold the fibers together. Discontinuity of the film would nullify most of its advantages. Filament fibers must be held to the yarn proper to prevent their stripping back and gathering along the yarn as fuzz-balls.

Fluidity. The size mix must be sufficiently fluid to obtain the desired amount of penetration. It is actually the fluidity of the size mixture which controls the penetration to a great extent, since at the temperatures prevalent in the size box, water solutions will wet cotton or rayon almost instantaneously. Because of this, the only hindrance to complete penetration of the yarn is the viscosity of the size. All things else being constant, the more fluid the size mix, the more penetration will be obtained.

Of course, we must remember that too much fluidity will give excessive penetration, and the size will not form the protective film on the outside of the yarn. The size mix should have enough viscosity (the reverse of fluidity); that is, its paste should be thick enough to form the film, and at the same time lay the fibers of the yarn,

Strips in mildew tests, which were innoculated with garden soil and incubated for 14 days: Left, untreated; center, treated with cuprammonium oxide; right, treated with sodium pentachlorophenate.
Agricultural Research Service, U.S.D.A

which a very fluid size will not do.

Transparency. The size film should be transparent, particularly in cases where the size is not removed before finishing. Dyed warps will be much brighter after sizing if the size film is completely transparent.

Mold Resistance. Enough preservative and antiseptic should be in the size mix, not only to prevent mildewing of the size itself, but also to hinder the growth of mold on the cloth under ordinary handling and storage conditions. However, the addition of sufficient antiseptic to prevent entirely the mildewing of the cloth under all conditions of storage at high humidities would be much too expensive to be practical.

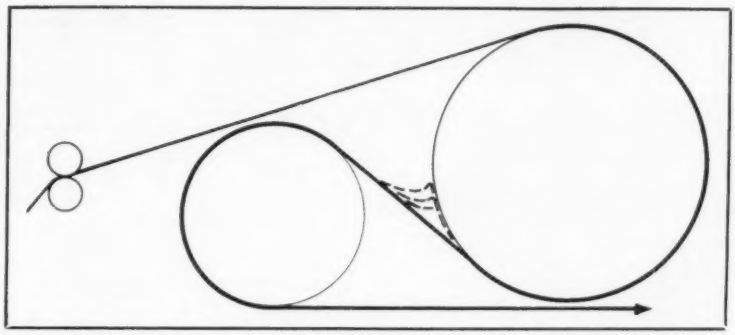
Ease of Desizing. The size mix should not contain any ingredients which will increase the difficulty of removing the size by the normal desizing processes, which may use enzymes, chloramines, acids, persulfates, or other materials.

Lack of Stickiness. A sticky size will adhere to the slasher cylinders, and in pulling away the film will be broken or distorted. The fiber ends will be pulled away from the yarn, the yarn becomes rough, and the slasher cylinder itself becomes dirty. Any tendencies toward stickiness of the dried yarn will naturally increase the difficulty of weaving.

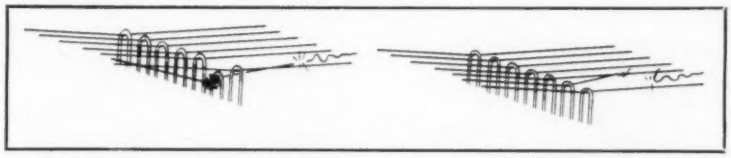
Yarns which break during weaving should drop back out of the shed immediately on breaking, so that the stop motion will work properly. When they do not, it may be due to the film surface being sticky, or to inadequate laying of the fibers.

Also, the material and short fibers which shed during weaving should not be sticky, as this will gum up the loom parts, causing weaving difficulties.

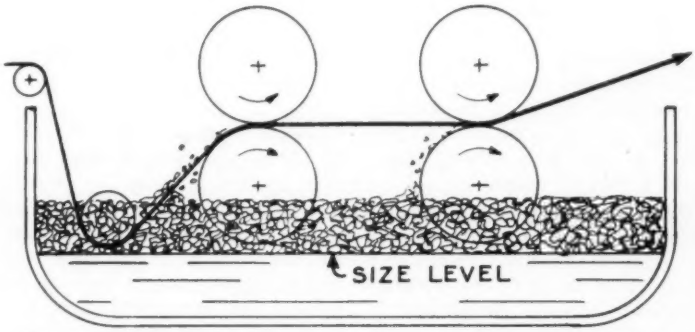
Uniformity. Most of the troubles in any textile process come from lack of uniformity. Obviously, the weave room will run much better if it is not continually necessary to allow for variations in the sized warp.



When yarns stick to the cylinders and pull away, the yarn becomes rough and gives trouble in weaving. Solid line shows normal direction of yarn; broken lines show sticking and pulling away from large cylinder.



A broken end should pop out of the shed and not tangle with neighboring yarns as shown in left sketch. If it sticks to or wraps around another end, as shown in right sketch, the drop wire will not fall and loom will go on weaving a defect into the cloth.



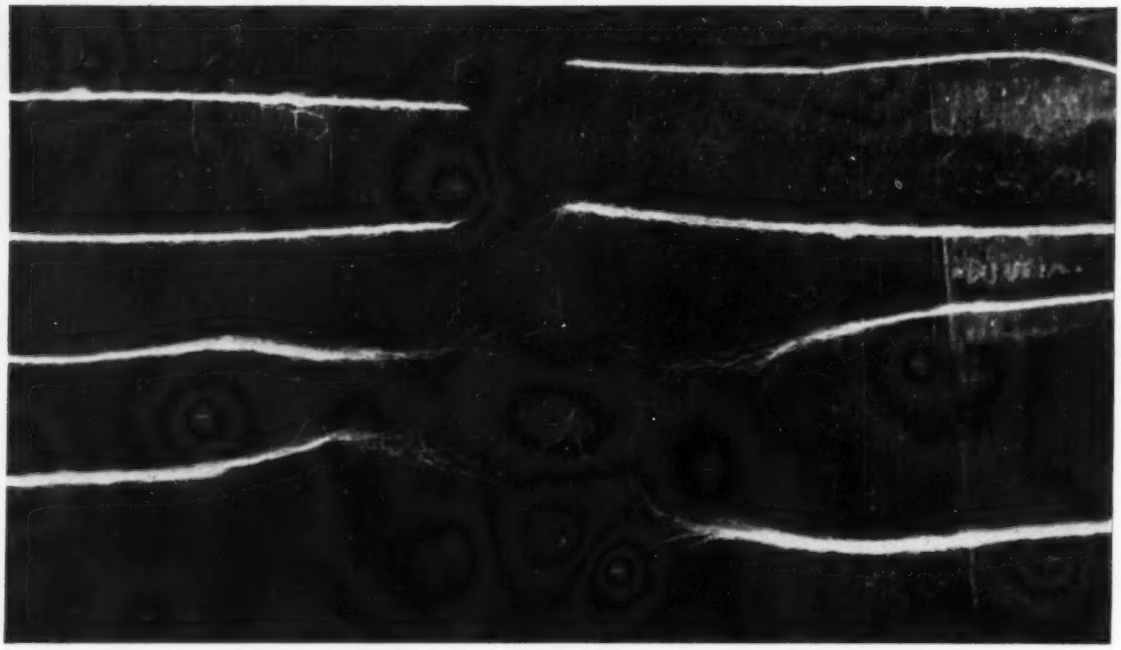
Too much foam in the size box will prevent penetration of size and the proper amount of pickup.

Loom settings and humidity controls may be adjusted to their points of maximum efficiency for the mill conditions when allowances do not have to be made for irregularities. Nothing can be more irritating to a superintendent than not knowing what to expect of his materials.

General. Sizing materials should have no odor, or at the most a slightly pleasant odor. Nor should they have any tendency to develop odor on storage, either as size or on the cloth.

The size mix should not foam in use, for the foam will prevent penetration of the size, and the yarns cannot pick up enough size if they are merely going through a head of foam which is mostly air. The size mix should be stable to normal mill conditions—that is, it should not be appreciably affected by the hardness of the water, nor should it be changed by dyes or bleaching agents that may be left on the yarns when slashing dyed or bleached yarns.

The size film must be able to stand some excessive heating, as it will be exposed to this from time to time when the slasher is stopped for doffing, or slowed for cutting laps. *(Continued next page)*



How sized and unsized yarns break. Sized yarns (two on top) break square; the two unsized yarns (below) show an appreciable slippage of fibers which have merely become untwisted and are not broken.

(Continued from page 103)

The materials going into the size mix should be stable in storage before preparation, and the preparation of the size mixes themselves should be simple.

The sizing ingredients must be compatible with each other, so that addition of one ingredient will not decrease the favorable properties of another, nor precipitate it from solution. While it is not necessary that the additives be dispersible in plain water, they must be thoroughly dispersible or emulsifiable in the size mixes, whether they be based on starches, gums, gelatin, or polymers. First class emulsions are particularly desirable for filament sizing, where separation of oil drops or impurities causes very obvious spots on the goods.

They should generally produce a smooth film, free of harshness, though this quality of harshness may sometimes be desired for special effects with heavy goods. And, of course, the size must be clean. Lack of cleanliness of a size compound, sizing materials, or the size mix in the mill is an indication of lack of care in preparation, and an almost sure sign of coming troubles from lack of uniformity.

Inexpensiveness. The desirability of this quality is obvious. However, it is not always so obvious from which direction low expenses come. Good sizing materials may be obtained at reasonable cost, and the highest priced sizes are not always the best. But there is a minimum level for high grade uniform materials, and an attempt to cut costs by buying inferior grades will result in increased expenses in weave room operations.

The "ideal" size is cheap. The "best" is the one that gives the lowest total expense of slashing costs and weaving costs.

All these qualities must be carefully balanced in a size for the specific purpose at hand.

In its function of preparing the warp yarns for more efficient weaving, the size acts in several ways.

Action of the Size. Probably its most important action in sizing of spun yarns is that of cementing the fibers of the yarn together, preventing fiber slippage. When a yarn breaks, this breakage is a combination of fiber breakage and slipping of the fibers by each other.

If one takes a spun yarn between his fingers and untwists it, he finds that it pulls apart easily. In this case the failure is due entirely to slippage. Within limits, the tighter the twist, the greater the strength of the yarn. Therefore, in order to utilize completely the strength of the fibers, we keep them from slipping by the binding action of the size.

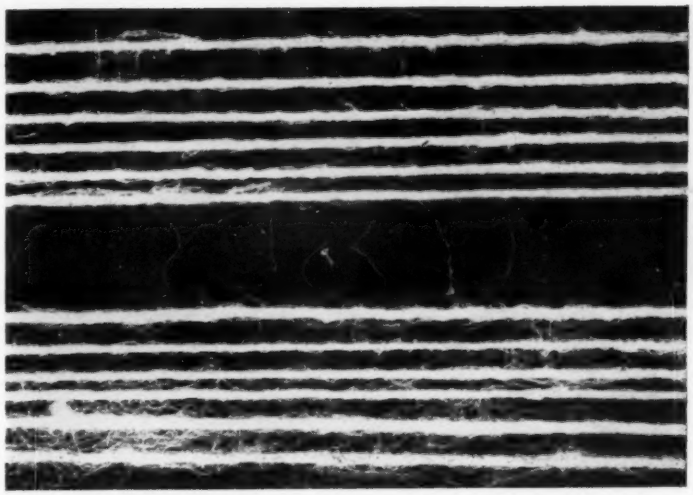
From this it might be inferred that complete penetration would be desirable, so that all the fibers might be bound together along their whole lengths. This is, however, not necessary. The fibers are not all either in the center or on the outside of the yarn, but due to the mechanism of twisting, parts of individual fibers are both inside and outside.

Sufficient cementing action may therefore be obtained by binding the outer fibers, and flexibility of the yarn will not be lost as is the case when penetration is complete and the yarn is solidly sized.

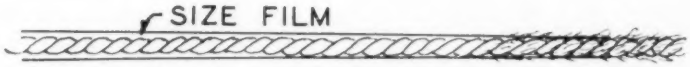
Of about equal importance, especially in tight constructions, is the action of the size in "laying"

the fiber ends. These protruding ends are bound against the yarn by the adhesive action of the size, so that the tendency for fiber entanglement between adjacent yarns in close weaves, with resultant breaking out of ends, is greatly diminished or eliminated. This laying of the fibers also produces a more compact, smoother yarn, reducing to a great extent the friction between yarns in the reed and against the heddles and drop wires.

To a certain extent with spun yarns, and very much so with filaments, the size film should hold protruding fibers to the yarn so that they cannot be peeled or stripped back along the yarn. When this occurs, if the peeling fiber does not break out of the yarn, it will gather in a fuzz-ball. These fuzz-balls will interfere with weaving, and often break out adjacent yarns. The yarns on which a fuzz-ball has grown may break when the ball is hit by the reed. And if the fuzz-ball does live through all of the weaving action, it ends up as a defect in the goods.



A shadowgraph showing laying of fibers in the sizing process. The 30s, bottom rows, are unsized. Top rows (30s) seen here have been sized. Adhesion in size is necessary to lay the fibers.



The action of the size in laying the fiber ends is important in order to minimize the tendency for fiber entanglement between adjacent yarns.

Strength of Film. The strength of the film of size is also a factor in increasing the strength of the yarn. The strongest type of size film does not have the mechanical strength of the fibers of the yarns, so that this is not as important as its cementing action. Yet "every little bit helps."

The action of the size film in giving the yarn a tough, smooth surface enables it to resist abrasion much better than the soft yarn itself is able to do.

In a properly compounded size, the lubricants will also contribute greatly to the reduction of friction and resistance to abrasion. It has been said that the lighter oily lubricants in a size will come off to a certain extent on the heddles and reeds, giving not only smoother action, but also increasing their rust and wear resistance. This sounds reasonable, but would be very difficult to prove in the small quantities in which the lubricant is effective.

Wearing Action and Strain. These functions combine to enable the warp to resist wear and tear from the mechanical action of the loom during weaving. There are two kinds of forces which may cause yarn breakage: wearing action and strain.

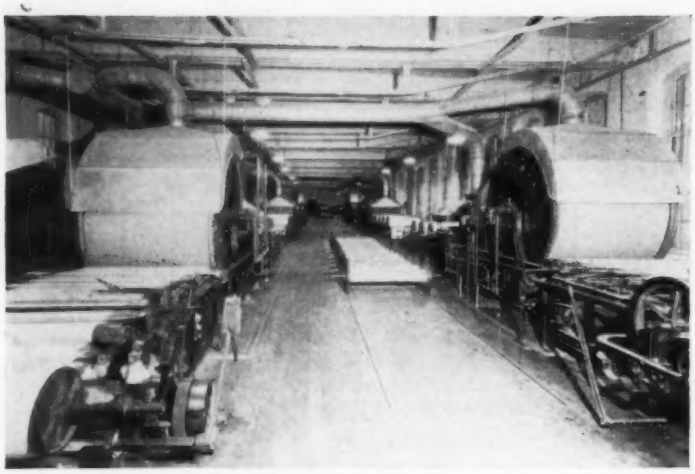
Wearing action comes principally from four sources: the rubbing of the reed in beating-up; wear from the eyes of the heddles and of the drop wires as the yarns pass through, and as the harness moves up and down; the rubbing of the shuttle across the warp; and particularly in heavy constructions, the rubbing of the yarns against each other as the shed is changed. The friction effects of the whip roll and the lease rods are comparatively negligible. To overcome this wear, good fiber lay and a tough, smooth size film are necessary.

Strain comes from two sources: the normal, steady tension of the yarns in the loom, and the periodic greater strains caused by the beating of the reed against the fell of the cloth. The increase in tensile strength of the yarns by the size acts to overcome this, but we must be sure that the increase is not brought about by any great sacrifice in elongation or elasticity. Elasticity is necessary to enable the yarn to withstand the strain of beating-up.

With the increase in speed available in the modern high-speed looms, the importance of good uniform sizing is growing by leaps and bounds. No mill can afford to have the value of its modern looms counteracted by an increase in end breakage.

Importance of Sizing. Percy Bean, the English textile expert, said forty years ago that "sizing is the most important preparatory process to which cotton yarns are subjected previous to their being woven into cloth." This statement has been heavily underlined by the development of the modern looms, and is of course as applicable to rayon as it is to cotton.

There is a tendency in a few mills just to get the size on the yarn, somehow or other, and expect the miracle of perfect weaving to be worked. With luck and easy weaves, they can get away with it. But when it is considered how many looms are served by



Several hundred looms are served by each slasher.

one slasher, and that several hundred yards of a warp may be spoiled by a few minutes' carelessness, with consequent loss of production and days of troubles in the weave room, it is obvious that the slashing process must be under competent leadership.

Steam leaks, for instance, or careless washing down of squeeze rolls may so dilute the size as to fill part of the weave room with soft warps. In addition to the measurable production loss, there is an immeasurable loss in employee morale through the additional work and decrease of output that is suffered by the weaver who must handle bad warps.

This important link in the chain of textile processing must be kept strong with capable employees. The reward will be great, as the manpower per yard in the slasher room is comparatively small.

Type of Size. Size mixes may be either "pure" sizes or weighting sizes. The purpose of pure sizing is simply to give the yarn maximum weavability. Weighting sizes are used when it is desired to add to the yarn weight that will remain in the finished goods. The latter types have been used more in the past in this country than at present, and have been more common in Europe than in America. Weighting sizes may add from 20 to 200 per cent of the weight of the yarn through the use of inorganic materials such as china clay.

Within the pure sizes we have "light" and "heavy" mixes for various purposes, depending on the difficulty of construction. Sometimes a small percentage of size is put on for weight, where the yarn or cloth is sold before removal of size, but there is a growing tendency to specify limits to the allowable weights that can be put on the cloths. For instance, the accompanying table shows the limits given by ASTM specification D 334-40.

Maximum Allowable Size, Natural Oils and Waxes* in Cloth for Rubber and Pyroxylin Coating

Sheetings	10.75 per cent
Drills	12.0 per cent
Sateens	12.0 per cent
Broken Twills	12.0 per cent

*The amount of natural oils, waxes, mineral matter, and other natural ingredients removable on desizing is assumed to be 4.25 per cent.

(To be continued next issue)

Keep Those Pressure Relief Devices in Good Order

BY HENRY A. JOHNSON*
Safety Engineer
Celanese Corp. of America

SAFETY valves, relief valves, or rupture discs are designed for the purpose of excess pressure on some vessel or system. Their effectiveness is in direct proportion to their efficiency in operating at proper pressures.

A corroded valve, an improperly set valve, an inoperative valve for any cause or reason is worse than no valve at all in that there will be a false sense of security based on the protection that the mechanism is supposed to give.

All relief or pop valves should be tested regularly in accordance with the manufacturer's recommendations and the type of service in which they are operating.

A safety valve may stick open because of small pieces of scale or impurities, but it may be cleared by operating the valve manually several times to clear the obstruction. A leak in a safety valve should never be stopped by tightening the valve spring.

A frangible rupture disc will not clog as easily as a safety valve, but it is possible for such discs to become coated with foreign material to the point where the rupturing pressure of the disc is affected. The condition of these discs should be checked regularly and where there is the possibility of an accumulation forming on the disc which will change the rupture qualities, a cleaning and maintenance schedule should be set up and adhered to.

These relief devices are designed and installed as a protective measure to handle and control pressures. Unless they are inspected and maintained in good working order, they are of no value as a dependable device.

Don't experience a serious explosion because the safety equipment that is provided failed to relieve the pressure.

*From January, 1956, issue of "Safety News Letter" published by the Textile Section of the National Safety Council.

Textile Market Can Be 75% Greater by 1965, ACMI Told

F. E. (Ebe) Grier
NEW ACMI HEAD

TEXTILE mill executives who journeyed to Hollywood, Fla., last month to attend the seventh annual convention of the American Cotton Manufacturers Institute were told that

(1) By 1965 a 75% increase in the domestic market for textile products is possible if this industry takes full advantage of the opportunities inherent in our dynamic and growing economy;

(2) Unless there is relief from "the unbearable competition of low-wage foreign nations," most of them would "live to see the transfer of the American textile industry to Japan;"

(3) United States participation in the Organization for Trade Cooperation (OTC) would transfer U. S. Government control of trade policy "to an organization subject to the control of foreign governments;"

(4) With an adequate program—adequate in price and research and promotion all combined—the total market for American cotton can be within four or five years up to 16 million bales and headed on up toward 18 and 20 million or more.

Before adjournment of the three-day meeting to which nearly 1,000 persons — including textile executives, their wives, associate members, and guests — went, the mill men

(1) Pledged to continue a determined fight for cotton textiles import controls so that the hundreds of thousands of employees of American mills will not lose their jobs;

(2) Went on record as being "unalterably opposed to U. S. membership in the Organization for Trade Cooperation;"

(3) Heard details of a finance plan which would allow the raw cotton industry to double its program of research and promotion to boost consumption of its products.

On Import Controls. In his address at the opening session, Institute president **A. K. Winget,** who is chairman of the board of American & Efird Mills, cited inroads by Japanese textiles into the American domestic market and the repeated fruitless efforts to gain government recognition of the acute danger to "one of our greatest industries, an industry which the Army Quartermaster General once said was second only to steel in defense of the country."

Then he asked, "Must there be closed mills and bread lines before the Administration in Washington concedes the possibility of irreparable damage to the industry?"

He pointed out the issue had been coming to a head for several years and "today we are standing in the midst of the most critical period in the modern-day life of the textile industry, face to face with the life or death question of whether our Government will stand idly by and permit this low-wage competition to seriously cripple" this industry.

"This critical period," he declared, "is one that was man-made for our industry, tailored by our Government, and it is one we are powerless to do anything about except through government action."

Pledging to continue a determined fight for cotton textiles import controls, Institute executive vice-president **Robert C. Jackson** at the closing session declared: "It would be an understatement to say that Government policy-makers, especially those in the State Department, are firmly opposed to the textile industry's position in regard to the need for import limitations. Their point of view, with arguments they use to support these views, is constantly being given expression through public statements by government officials and in letters to members of our industry who write in on this subject."

It is disturbing that some of these Government officials in many instances use out-dated figures and half-truths in refusing to grant relief that would save the industry from continued unfair competition by foreign low-wage countries, Mr. Jackson said.

New Public Relations Set-Up. Stressing the need for an improved public awareness of the value of the textile industry, Mr. Winget announced that beginning with the first of May the ACMI staff shall assume the major responsibility for the industry's public relations program, adding personnel and facilities which may be needed to carry out a comprehensive program. "We believe this new administrative set-up will make for a more compact organization, with greater dividends for each dollar spent," he said.

Mr. Winget paid tribute to the public relations firm of Dudley-Anderson-Yutzy for its fine service to the industry for the past ten years and told Institute members that the organization will continue to be available for assistance during the period of transition, as well as for aid in conducting such special projects as may be referred to them.

Cotton Consumption Potential 75% Greater than 1955 Consumption. Based on the shifts in family income that will take place in an expanding economy, plus the population growth by 1965, the potential domestic market for cotton consumption in apparel and home furnishings can be 75% greater than the actual consumption in 1955, Arno H. Johnson, vice-president and director of research of J. Walter Thompson Co., told those attending the Thursday afternoon session which was devoted to merchandising of textiles.

"To attain this potential will require modern marketing, promotion, merchandising, and advertising since it means education of mass millions of our population to

step up their appreciation and use of cotton — at least up to the same levels of consumption of the better income groups prewar," Mr. Johnson said.

Summarizing the session on merchandising, **Frank H. Leslie** of Leslie and Company, told the group that before attempting to change the buying concepts and habits of millions of people they must first change a few selling concepts of their own.

"For the past two decades," he said, "we have concentrated our best efforts on manufacturing efficiency. In this regard, we have done a superlative job. As merchants, however, we have been much less adequate than the compounders of tooth-pastes and soda-pop and deodorants . . . I believe it is time we gave those 'poof' bottles a little competition by suggesting the hygienic as well as aesthetic advantages of clean shirts or a change of underwear."

First of the textile industry selling concepts which should be changed, in the opinion of Mr. Leslie, is the usual "slide rule" or "simple arithmetic" approach to problems. "In the somewhat irrational world of merchandising, two plus two does not always equal four," he said. "It sometimes comes up seven or snake-eyes. And I do not use the gambling analogy to emphasize the risk involved . . . but rather to indicate how remote from our habitual modes of thinking it can be."

Second is the fact that the attempt to direct habits and motivations is not primarily a matter of selling one fabric against another, nor one finish against another, nor even one fiber against another. Instead, it is to make the consuming public as textile conscious as it is "already car-conscious, television-conscious, and fresh-strawberries - in - the - wintertime-conscious.

"It might seem that the simple answer would be the direct approach of a cooperative industry effort," Mr. Leslie said, "since the accruing benefits would be industry wide. In the textile industry, however, which has so fruitfully fostered the individuality of genius — or, perhaps, the genius of individuality — the simple is frequently the eccentric. Complete industry cooperation, founded on a unanimous acceptance of a common interest, is, in a sense, a newly arrived Japanese import. Granting its impracticability in promotional efforts, we could hope for a new emphasis or direction in textile advertising whose combined effect might achieve the same results. . . .

"Let us recognize who our real competitors are and give them the kind of competition they give us. It will be a lot easier to divide the cake among ourselves after we have baked it."

Expanding Cotton's Markets. This was the subject of a panel presentation on Friday morning by four representatives of the National Cotton Council — **William Rhea Blake,** executive vice-president; **M. K. Horne,** chief economist; **Ed Lipscomb,** director of sales promotion; and **Clifton Kirkpatrick,** director of field services.

There is no way to build a future for American cotton upon price alone, Mr. Horne told the group. In the fiber market three great competitive weapons are at work — the price, the investment in research, and the investment in promotion. Cotton is out of line in all three, he said.

Budget-wise, the need for sales promotion is large in such markets as men's wear, work clothes, children's wear, domestics, and rugs, Mr. Lipsomb declared. The industry would benefit, he stressed, through substantial increases in advertising addressed directly to consumers.

Mr. Kirkpatrick presented details of a finance plan which would allow the raw cotton industry to double its program of research and promotion. The plan, which was approved at the recent annual meeting of the Council in Biloxi, Miss., calls for increases in payments now being made by the producer - ginner, warehouse, merchant, cottonseed crusher, and spinner groups. It would increase the organization's income from approximately $1.6 million annually to more than $3 million.

Effective August 1, 1957, spinners' payments to the Council will be increased from 5 to 10 cents per bale of cotton consumed.

On OTC. Ranking Republican in the Senate and chairman of the Senate Republican Policy Committee, **Senator Styles Bridges,** told Institute members on Saturday morning that he could not share the views of President Eisenhower on the bill now before Congress which would provide for U. S. participation in OTC and that he would oppose it in the Senate.

He pointed out that as a participating member of GATT, the U. S. would have only one vote out of 35 "in any dispute arising over, for example, the revision of tariff levels — and not even that if we happened to be a party to the dispute."

Senator Bridges voiced also his support of a bill introduced by Senator James O. Eastland (D-Miss.) which he said seeks to have the government maintain a fair share of the world market for U.S. cotton and to limit the importation of cotton goods into this country by establishment of quotas.

He warned against the Customs Simplification Act bill in which he said there "exists the threat of tariff reduction through indirection" and which could "result in our present congressional safeguards being circumvented." He predicted that if Senate floor action occurred on this bill before adjournment, it would be modified.

Officers Elected. At the final general session on Saturday morning, **F. E. (Ebe) Grier** of Greenwood, S. C., was elevated from first vice-president to president of ACMI, succeeding Mr. Winget. Mr. Grier is president and treasurer of The Abney Mills, president and treasurer of Toxaway Corp., and chairman of the board of Erwin Mills.

Elected first vice-president was **L. G. Hardman, Jr.,** of Commerce, Ga., who is president, treasurer, and chairman of the board of Harmony Grove Mills, Inc.

H. M. Jones of Laurinburg, N. C., was elected second vice-president of the Institute. Mr. Jones is president and treasurer of Waverly Mills, Inc., and vice-president and treasurer of Scotland Mills, Inc.

R. C. Jackson and **F. S. Love** were re-elected executive vice-president and secretary-treasurer respectively.

This Mill Increased Profits by Sharing Profits

STAFF PREPARED
EXCLUSIVE

American Velvet Company's profit sharing plan has highlighted employees' stake in company profits. The results have been lower costs, higher quality standards, manufacturing improvements, and a rare degree of employee-management cooperation.

THE STORY of the American Velvet Company, of Stonington, Conn., is an important one on an international level, for it tells how a bitter management-employee relationship, existing in the mill for years, almost destroyed a company and a community. This occurred when a 16-month strike resulted after loom loads were increased from two to four per weaver in 1938.

It tells how the same employees became enthusiastic partners in the velvet business through the hard work and planning of former company president Clarence Wimpfheimer; it tells how the essence of the program, a profit-sharing plan, put the mill on its feet; and then, because the philosophy involved sharing responsibility as well as profits with employees, the objective of labor and management became the same: *everyone* in the mill became concerned with *creating* profits.

The result has been an increase in profit levels over any previously known in the history of the company.

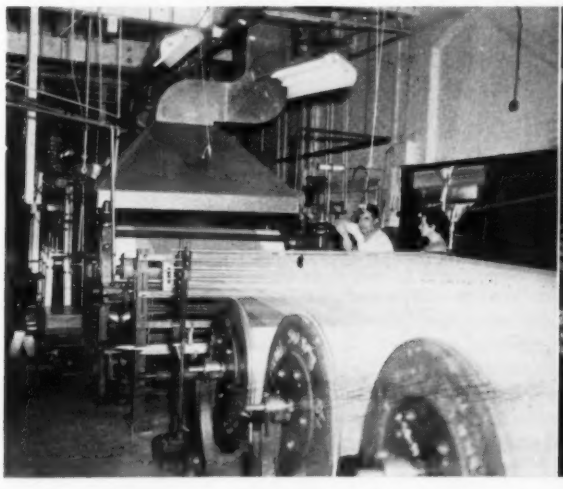
An outstanding characteristic of the partnership is the contribution of employees to all phases of production, managerial, and financing planning: it is the *employee* who demands and helps find solutions to low production, high costs, poor quality, and heavy inventories.

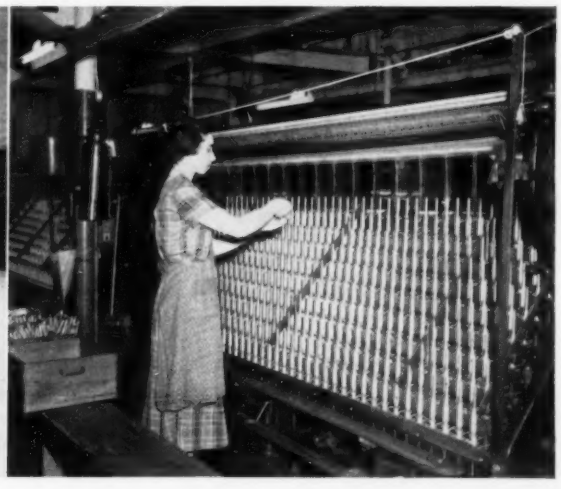
Rather than attempting to describe the history and results of American Velvet's profit-sharing plan in all its ramifications during the past 15 years, this account is concerned with telling briefly how the system works and illustrating with the accompanying photographs some of the manufacturing expedients installed by employees. It is important to proper evaluation of the latter to realize that the objective was greater company profits, rather than individual reward. No prizes are awarded for useful suggestions, because the company feels that an idea is rarely originated or developed by one person alone.

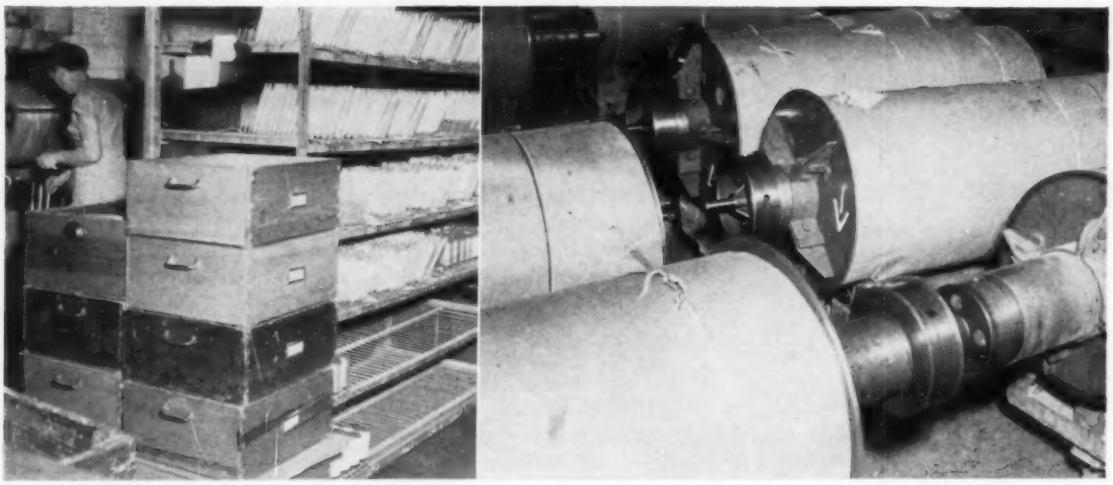
The Plan. The present profit-sharing plan provides that 18% of profits, before taxes, are distributed to employees at the end of the year in cash as additional compensation; an additional 9% of profits before taxes is paid into a plan to provide for pensions. All employees (including foremen) who work at least 160 hours during the fiscal year are eligible to share in the fund, and division of money is made in proportion to total wages earned during the fiscal year (Dec. 1 to Nov. 30).

From 1940 to 1954 more than $3 million had been paid to employees through profit-sharing. The individual yearly share has varied between 11 and 39% of annual employee pay. *(Continued next page)*

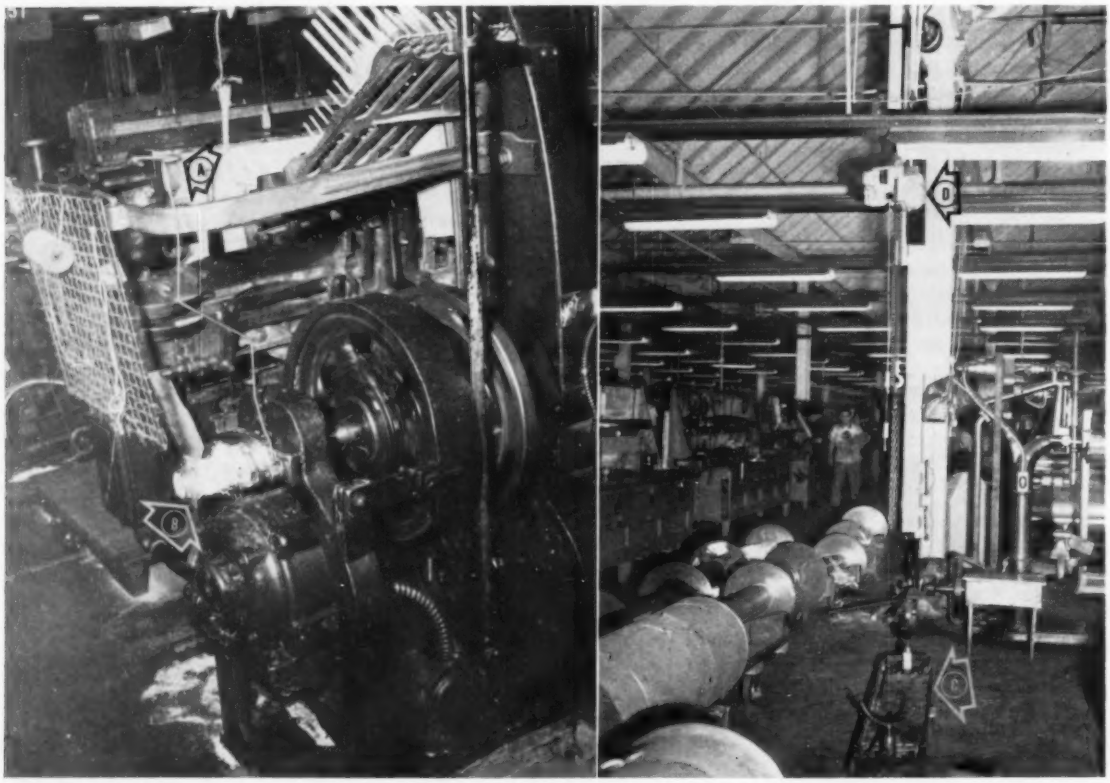
AT THE SHIFT CHANGE, all machines are kept running and, at employees' suggestion, the old shift stays on the job until the new is ready to take over. Right: Quillers originated the idea of running up a bunch at the start-up of a set of filling, for fewer broken picks; a maintenance man worked out the drop wire-type stop motion.







TAG ON FILLING BOX (left) eliminates mixed lots experienced formerly when a loose slip of paper was used. This, plus a plan to convert this filling room to a self-service department, originated with employees. Arrows were painted on warps (right) when twisters became impatient with mistakes easily made when warp direction was indicated on the paper cover; employees are now trying out reed mounting in drawing-in department.

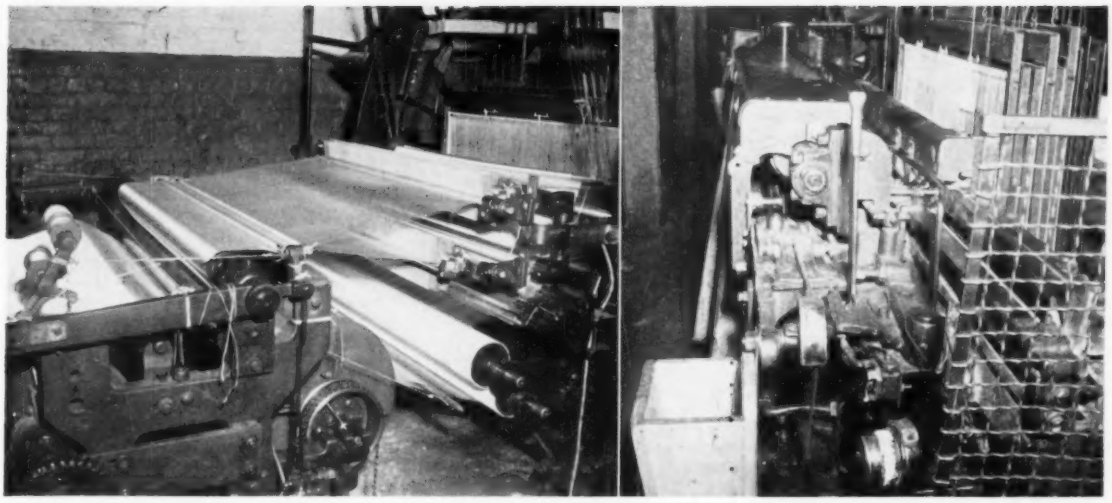


NEAR-EMPTY QUILLS are run over guide **A** (left photo) and wound on end of crankshaft **B** because a weaver thought it would increase his production. Right: Hydraulic beam truck **C** was built by a fixer because he felt the job could be done better with it. The hoist **D** was provided at employees' request.

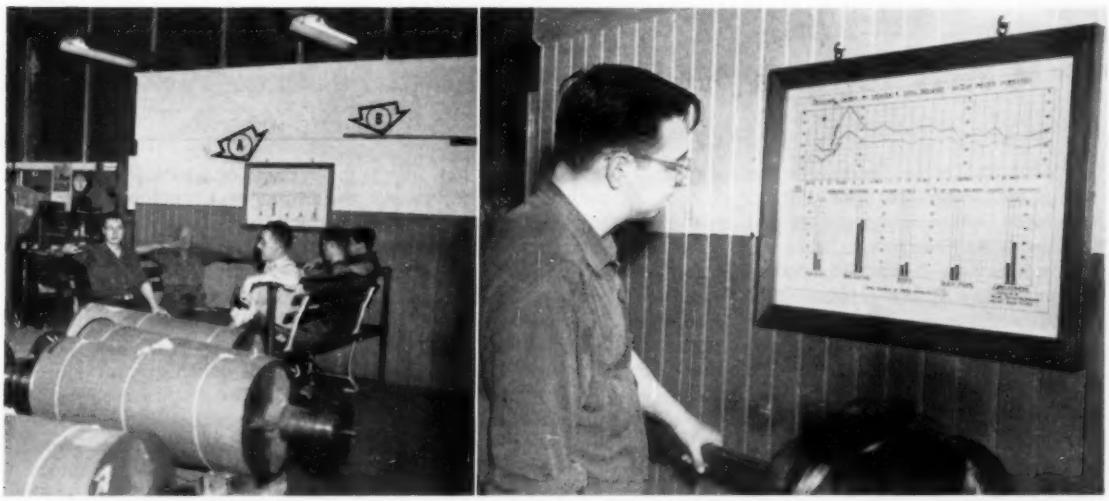
(Continued from page 109)

One important distinction made by management on the plan is that it is not used as a substitute for wages, vacations, paid holidays, or other benefits. It is not used as an anti-union device; actually, installation of the program was "sold" to reluctant employees with the aid of union officials.

Administration. In order to accommodate the varied situations that arise through this active employee participation in company affairs, several committees have been formed. Characteristic of the



GROUND WARP is split (left) because on fixer thought drop wires would work more efficiently. Right: Knife slide (shown in motion) is being improved at fixers' request. Shape, material, and lubrication method are being varied to locate conditions for best job.



THERE'S A SMOKING AREA (left) in each department. This one, in the weave room, contains quality chart **A**, rack **B** for hanging seconds so weavers can examine and discuss causes. A smoker, who recently sat in this area too long, was sent back to work by a weaver who objected. Quality charts are posted also in finishing department and dyehouse. In right photo a weaver studies weekly totals of seconds and their causes, will do something about reducing them.

activities of the commitees is informality and lack of set rules concerning the exact level at which a problem or idea *must* be aired. Communications, because of the small size of the plant (about 500 employed), is relatively simple and is carried out for the most part by word of mouth.

The "Pops" Committee—This is a top advisory board, made up of all former union presidents, which makes its suggestions to both management and the union. Such fields as labor relations, finance, and production are covered by the group, which has long mill experience. This committee has no authority to make, change, or administer regulations or conditions. Its recommendations usually carry weight because of the respect and confidence earned by committee members.

The Planning Board—This was formed to deal with new conditions that result in inequities in work loads and pay rates, such as usually occur when a new cloth is started up in the mill. The Board consists of three members of the Pops Committee and three from management.

It makes a personalized study of the problem in the mill and forms an answer to it. The suggestions are reported to the Pops Committee, and to management and the union's Shop Committee at a regular meeting. Regular labor-man-

agement procedures follow in the event that any changes are made.

The Shop Committee—This is the official union bargaining agent. It is formed by electing six union members from the floor at the union's annual meeting and is joined by three union officers. It meets with management on the occasions of negotiating a contract or resolving a grievance. No grievances have been arbitrated since inauguration of the plan; they are usually settled informally at lower levels.

Supervisory Meetings — These are held to overcome the "lost soul" position of foremen where such close liaison between management and union has tended to bypass this group in ironing out many problems. Through this form of communication, foremen get a chance to participate in these

THE SPARE TRAILER is kept at the loading platform because a shipping clerk thought it would be better to load throughout the day rather than rush during the 3 to 5 o'clock period formerly allowed with the single vehicle. This cuts mistakes and overtime payments.

It Pays to Know How the Amended Federal Wage-Hour

ON MARCH 1, 1956, the minimum wage under the Fair Labor Standards Act was increased to $1.00 an hour. This new minimum, set by the Fair Labor Standards Amendments of 1955, takes the place of the previous 75-cent rate.

In the textile-mill products manufacturing industry as a whole, nearly 85 per cent of the production operatives were already earning at least $1.00 an hour, according to an official wage survey. But the principal divisions of this industry varied greatly in the percentage of production operatives below $1.00.

For instance, about 2 per cent of the operatives in the woolen and worsted division, and those engaged in dyeing and finishing textiles (except knit goods) were earning less than $1.00 an hour. Thus the wages of about 98 per cent of such operatives were not directly affected by the raising of the minimum wage to $1.00. On the other hand, in textiles, yarn, and broad-woven goods mills, and in miscellaneous textiles, about 12 per cent of the production operatives were earning less than $1.00 an hour.

While considering their pay practices in the light of the new minimum, many manufacturers in the textile industry might find it profitable to review the other provisions of the Federal Wage-Hour Law as well, for it has been established that most violations are unintentional, arising from failure to understand fully the statutory requirements.

The basic provisions of the law require:

(1) A minimum wage of $1.00 an hour, beginning March 1, 1956;

(2) Overtime pay of at least time and one-half the employee's regular rate for all hours worked over 40 a week;

(3) A minimum age of 16 years for most jobs, and 14 for a few jobs. In addition, there is an 18-year age minimum for work in occupations designated hazardous by the Secretary of Labor.

Except for the new minimum wage, the application of the law to textile employees remains the same as before enactment of the 1955 amendments.

Who Is Covered? The Federal Wage-Hour Law continues to apply to employees who are engaged in interstate commerce or in the production of goods for interstate commerce, except those who are specifically exempt. In general, no problem with respect to coverage exists in the textile industry, since it manufactures products that are regularly shipped in interstate commerce.

However, textile manufacturers should realize that the law's provisions apply not only to operatives who make the textile goods, but to employees in occupations closely related and directly essential to the production of the goods for such interstate commerce. Nor should the employer overlook office employees, shipping operatives, janitors, porters, and other maintenance employees, and sales help since they, too, are covered by the law.

Even though the employer does not ship textile goods in interstate commerce, either directly or indirectly, he may have some covered employees. The law applies to employees who purchase, order materials from other states, or who unload, unpack, check or otherwise handle goods on receipt directly from outside the state, or maintain records on such interstate activities. Also covered are

matters.

The Future. Employees and management realize now that business conditions do not warrant continued increases in pay; a mutual effort is actively under way to maintain the favorable profit picture. It may take the form of increased work loads, or mean occasionally reduced work weeks to work off inventory—whatever action is taken to meet any given situation, indications are that the relationship created by the profit-sharing program in Stonington will continue to exist and that such action will be mutually sanctioned by both management and labor and most probably will be suggested by the latter.

PROFIT-SHARING PLAN STATISTICS

Fiscal Year	Net Profits Before Taxes and Profit Sharing	Profit-Sharing Totals			Profit Sharing Percentage of Wages Earned		
		Cash	Pension Fund	Total	Cash	Pension Fund	Total
1940	103,352.39*	31,005.72		31,005.72	11		11
1941	215,576.92	53,894.23		53,894.23	18		18
1942	258,898.41	64,724.60		64,724.60	20½		20½
1943	328,194.67	82,048.67		82,048.67	26		26
1944	291,888.25	72,972.26		72,972.26	21		21
1945	421,681.85	105,420.46		105,420.46	26		26
1946	563,685.44	140,921.36		140,921.36	29		29
1947	943,505.50	188,701.10	94,350.55	283,051.65	26	13	39
1948	594,393.94	118,878.79	59,439.39	178,318.18	14½	7½	22
1949	722,311.45	144,462.29	72,231.15	216,693.44	17½	8½	26
1950	1,134,413.79	226,882.76	113,441.38	340,324.14	22½	11	33½
1951	1,378,979.31	275,795.86	137,897.93	413,693.79	22	11	33
1952	1,372,050.12	274,410.02	137,205.01	411,615.03	20	10	30
1953	1,189,513.83	237,902.77	118,951.38	356,854.15	16	8	24
1954	851,244.78	170,248.96	85,124.47	255,373.43	11	5½	16½

*This first year of profits represents net profits after taxes.

Law Affects Textile Manufacturers

BY NEWELL BROWN
Administrator

employees who regularly travel across state lines in the performance of their duties, or who in the course of their jobs, regularly make use of the instrumentalities of commerce such as the telephone, telegraph, and mails for interstate communication.

"White - Collar" Exemptions. Some firms in the textile industry should exercise more care in taking the minimum wage and overtime pay exemption the law provides for employees engaged in bona fide *Executive, Administrative, Professional* or *Local Retailing* capacities, or as *Outside Salesmen* as defined in regulations, Part 541, issued by the Administrator of the U. S. Department of Labor's Wage and Hour and Public Contracts Divisions. *More than one-third of the overtime violations found in the industry last year were due to erroneously claiming this exemption.*

Employers should avoid the all-too-common fault of assuming employees are exempt because they have impressive job titles or are paid a good salary. For exemption to apply, the individual's duties must meet a series of tests listed in the regulations. Such employees as inspectors, examiners, working foremen, machine repairmen, paymasters, and laboratory assistants usually do not meet the exemption tests.

Among the basic requirements for exemption are the following: (1) An *Executive* employee's primary duty must be the management of the enterprise, or of a recognized department or subdivision; (2) an *Administrative* employee must primarily perform office or nonmanual field work of substantial importance to the management or operation of the business; (3) a *Professional* employee must primarily perform work requiring advanced knowledge in a field of science or learning, or perform creative work in an artistic field.

It is not necessary, however, that an employee spend every hour of his workweek in the specified duties. A 20 per cent tolerance is allowed. For the *Executive, Administrative* or *Professional* employee, the tolerance is measured by the time which he himself spends in a workweek in nonexempt activities.

There are also salary tests for exemption of executive, administrative, and professional employees. At the present time, in light of recent economic trends, changes in these salary requirements are being considered. Should they be revised, the Divisions will make a public announcement and the new tests will be published in the Federal Register. In the meantime, for exemption purposes salary tests remain as they were.

For the *Executive* exemption, the employee must be paid on a salary basis of at least $55 a week (or $238.33 a month). For both *Administrative* and *Professional* employees, the test is $75 a week (or $325 a month) on a salary or fee basis. For employees who are paid on a salary basis of at least $100 a week, there are shorter duties tests for exemption in each of these three categories of employment. These tests also are contained in the Administrator's regulations, Part 541.

Some Overtime Pay Problems. The Federal Wage-Hour Law does not require that an employee be paid each week. The employer may make his wage and salary payments at other regular intervals, such as every two

weeks, every half-month, or once a month. What the Act does require is that both minimum wage and overtime pay must be computed on the basis of hours worked in *each* workweek, standing alone. Thus the employer cannot eliminate the obligation to pay overtime by averaging the hours of work over two or more workweeks.

Before overtime pay can be computed it is necessary to determine the employee's regular rate, since the Act requires payment for overtime hours at not less than one and one-half times the regular rate of pay. The "regular rate" is defined in the Act to include all remuneration for employment, except certain payments such as premium payments for overtime work and work on Saturdays, Sundays, and holidays, discretionary bonuses, gifts, and payments in the nature of gifts on special occasions, contributions to welfare plans, and payments made pursuant to certain profit-sharing, welfare or thrift and savings plans.

Of course, the regular rate may be more than the statutory minimum, but it cannot be less. Should an employee's regular rate fall below the statutory minimum, the employer must make up the difference and compute overtime on the basis of at least $1.00 an hour.

Assuming an employee receives no other compensation than that stated, here is how to figure the regular rate and overtime compensation in some typical situations:

Employee paid an hourly rate — The regular rate of pay is the hourly rate. When the employee's workweek is more than 40 hours, he is due one and one-half times his regular rate for each hour over 40.

Piece-rate operatives — The regular rate is obtained by dividing the total weekly earnings by the total number of hours worked in the same week. The employee is entitled to payment of one-half this regular rate for each hour over the 40th in addition to the full piece-work earnings.

Example: Ellen is paid a piece rate. In one week, she worked 44 hours and her earnings came to $66. Her regular rate for that week was $1.50. In addition to her regular rate, she got 75 cents (one-half of $1.50) for each hour over 40, or four times 75 cents for her overtime hours. This $3.00 overtime premium brought her total earnings for the week to $69.

Another way to compensate piece-rate employees for overtime is to pay one and one-half times the piece rate for each piece produced during overtime hours. The piece rate must be the one actually paid during non-overtime hours and it must be enough to yield the minimum wage per hour. However, this method of payment may be used only if the employer and employee agree to it in advance.

Example: Jim is paid 10 cents for each piece. In a week during which he worked 46 hours, he earned $50 for the first 40 hours at this rate. For his overtime hours, he was due piece and one-half or 15 cents for each piece produced. As he produced 60 pieces during the overtime hours, he was paid $9.00 (60 times 15 cents) as overtime pay. Thus, he earned a total of $59 for the week.

Salaried employees — The regular rate for an employee who is paid a salary for a specified number of hours a week is obtained by dividing the weekly salary by the hours.

Example: George is paid a salary of $60 for a 40-hour workweek. His regular rate of pay is $1.50 ($60 divided by 40 hours). In weeks he works overtime, he is owed $2.25 (one and one-half times $1.50) for each hour over the 40th.

If a salary is paid as straight-time pay for whatever number of hours are worked in a workweek, the regular rate is obtained by dividing the salary by the hours worked each week.

Example: Joe, whose hours vary from week to week, has an understanding with his employer that he will be paid $60 a week. Therefore, his regular rate will vary when he works overtime. When he works 50 hours, his regular rate is $1.20 an hour ($60 divided by 50 hours). He is due one-half the regular rate, or 60 cents, for each of the 10 overtime hours plus his salary, or $66 for the week. If he works 60 hours, his regular rate would be $1.00 an hour and he would be due one-half that, or 50 cents times the 20 overtime hours plus his salary, or $70 for the week.

If a salary is paid on other than a weekly basis, the weekly pay must ordinarily be determined in order to compute the regular rate and overtime pay. For instance, if the salary is paid for a half-month, you multiply by 24 and divide the product by 52 to get the weekly equivalent. A monthly salary should be multiplied by 12 and the product divided by 52.

Production Bonuses. The mill that pays employees production bonuses should guard against the fairly frequent mistake of failing to take the bonus payment into account when computing overtime pay. If employees are told to expect additional payments upon attaining certain achievements, such payments must ordinarily be included in the regular rate for overtime pay purposes.

Typical of these kinds of payments are individual or group production bonuses, payments for quality and accuracy of work, attendance bonuses and bonuses contingent on the worker's continuing on the job until the time when the payment is made.

Hours Worked. Many firms would better their compliance record if they remembered that employees must be paid for all hours worked. They should count as hours worked all time the employee is working on his job and all time he is required to be at his place of work or on duty. Thus, when machines break down, the employee is owed compensation for his working time if he must stand by until the breakdown is repaired, or if he is assigned to other tasks, or if the time is too short or its length too indefinite for the operative to use the time effectively for himself.

Sometimes, too, such employees as spinners, weavers, oilers, and sweepers begin working before the start of the workday. Time spent on the job by employees who come in early or stay late should be counted as hours worked.

Child Labor. As previously stated, the Wage-Hour Law sets a minimum age of 16 for general employment and 18 for work in jobs declared hazardous by the Secretary of Labor. Children of 14 and 15 years of age may be employed in a limited number of jobs, such as office and sales work, outside of school hours. The law directly prohibits the employment of boys and girls below the minimum ages in interstate commerce and in the production of goods for interstate commerce — including any closely related occupation or process directly essential to such production. It also prohibits the shipment or delivery for shipment in interstate commerce by any producer, manufacturer, or dealer of any goods produced in establishments in or about which minors have been illegally employed within 30 days prior to removal of the goods.

Textile manufacturers should especially note that among the jobs which have been declared hazardous are the occupations of motor-vehicle driver or helper, elevator operator, and jobs involving riding on freight elevators, unless the elevator is operated by an assigned operator.

Failure to comply with the child-labor provisions can result in penalties. Employers can protect themselves against unintentional violation of the child-labor provisions by requiring, and keeping on file, a certificate of age for each young employee. Age or employment certificates issued under state child-labor laws are accepted as proof of age in all states except Idaho, Mississippi,

South Carolina, and Texas, where Federal certificates are issued.

What Records Must Be Kept? Under the Federal Wage-Hour Law, employers are required to keep records on wages, hours, and certain other specified items that most employers keep for their own information. No special form or order for the records is necessary.

The records that are to be maintained for exempt employees differ from those required for nonexempt employees.

Payroll records and certain other data must be kept for at least *three years* from date of entry. Supplementary records, such as time sheets and time cards, need be kept only *two years*. Employers may keep microfilm copies of their records, provided facilities are made available to inspect the film and the employer is prepared to make any transcription of the information contained on the film, if requested by the Divisions.

Complete information of what data should be recorded is available in the Division's record-keeping regulations, Part 516.

Poster Must Be Displayed. Firms that have covered employees are required to display a poster where employees can readily see it. This poster, which briefly outlines the law's provisions, may be obtained free from the Divisions' nearest office.

It Pays To Know The Law. It is a sound dollars-and-cents proposition for every employer to be sure that he is complying with the Act. Most of those employers who have had to make unexpected payments of back wages to their employees have found themselves in this situation because they were not fully informed about the statutory requirements.

The Federal Wage and Hour Law provides three methods of recovering back pay due. (1) Employees may bring suit to recover back pay and liquidated damages equal in amount to the wages withheld, plus attorneys' fees and court costs. (2) On the written request of employees, the Secretary of Labor may bring suit against employers to recover back wages. However, employees who consent to suit by the Secretary on their behalf cannot recover statutory liquidated damages. (3) The Divisions' Administrator may supervise the payment of back wages for employees, under certain circumstances. The employee may not bring suit if he agreed to let the Administrator supervise the back-wage payments and has been paid in full.

Where To Obtain Information. The simplest way to avoid inadvertent violations of the Fair Labor Standards Act is to consult the U. S. Labor Department's Wage and Hour and Public Contracts Divisions on any doubts. Inquiries are answered by mail, telephone, or in person-to-person interviews, or at any regional or field office. These offices also supply the Divisions' publications.

Regional offices are located in Boston, New York, Philadelphia, Birmingham, Cleveland, Chicago, Kansas City, Dallas, San Francisco, and Nashville. There is at least one field office in almost every State.

Masterpiece in Silk Received By Smithsonian Institution

SILK MASTERPIECE PRESERVED FOR POSTERITY. On hand for the presentation of the Wullschleger silk Jacquard to the archives of the Smithsonian Institution's Textile Wing were **Arthur J. Wullschleger,** president of Wullschleger & Co.; **John M. Sullivan,** president of American Silk Council and vice-president of Gerli & Co., Inc.; **Dr. Remington Kellogg,** director of the Smithsonian Institution; **Andrew Sokol,** president of National Federation of Textiles and vice-president, J. P. Stevens & Co.; **Grace L. Rogers,** curator of textiles for the Institution; **Wallace Sprague,** managing editor, Parade Magazine; **Arthur E. Wullschleger,** chairman of the board of Wullschleger & Co., and donor of this silk masterpiece; **Robert Frick,** technician in charge of filament fabrics, J. P. Stevens & Co.; and **Edward Ix,** president, Frank Ix & Sons, Inc.

NOW on display in the Textiles Wing of the Smithsonian Institution in Washington, D. C., is the Wullschleger silk Jacquard, "The Signing of the Declaration of Independence."

The precious silk weaving, the gift of Arthur E. Wullschleger, chairman of the board of Wullschleger & Company, Inc., of New York, was prepared from the Durand steel engraving of the original Trumbull painting, which hangs in the Rotunda of the Capitol in Washington.

In presenting this Jacquard to the Institution, Mr. Wullschleger said: "My purpose in undertaking this work was not for any financial gain or commercial advantage, but merely to show the world what could be accomplished in the art of silk manufacture. Also I was eager to show my sincere admiration for those leaders who were instrumental in the formation and the guidance of my adopted country."

A special building in Lyons, France, housed the six Verdol weaving machines necessary for this project, the announcement indicated. At no time during the three working years was work

suspended.

In addressing the group of silk manufacturing executives who were on hand for presentation of the Jacquard, Robert Frick, technician in charge of filament fabrics, J. P. Stevens & Co., explained the semi-mechanical way of weaving such intricate designs. "To get the fine effects (the 48 facial expressions represented in this weaving) required many ends and picks in warp and filling, in fact 646 ends and 245 picks per inch."

Mr. Frick went on to say, "There were nearly 19,000 ends used in the warp. Therefore, to produce a picture of 15⅛ inches long, 3712 picks were required; and, with the borders on each side, a total of 5872 picks had to be woven. Since six machines were used, a total of 35,232 cards had to be cut. 35,232 cards cut on an American fine index machine tied together would give a total length of about 2¼ miles of cards. Never before or since were six fine index Jacquard machines used for one fabric."

Mr. Frick concluded that this was the happy "mingling of the spirit of enterprise, skilled artistry, and mechanical know-how that produced this fabric of lasting value."

Vacuum Stripper Modification Reduces Waste and Prevents Contamination of Reworkable Stock

STAFF PREPARED
EXCLUSIVE

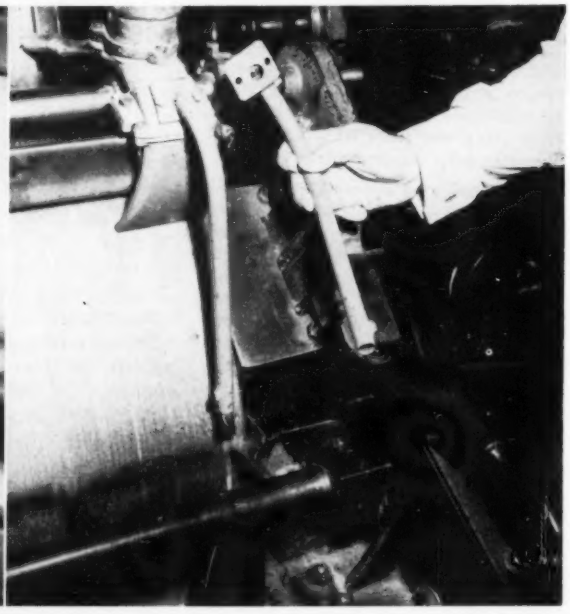
APPROXIMATELY eight to nine pounds of good cotton were wasted per day (on three shifts) at Highland Cotton Mills, Inc., High Point, N. C. This cotton was removed from the card pan and put into the pocket of the man stripping each of 86 cards in one card room. The waste was made up of the strip loosened from the cylinder by the Abington stripper, as well as some good cotton removed by the operative, and amounted to approximately $750 worth of stock per year.

Stripper Device. A nozzle or extra vacuum tube was installed on the Abington card stripper to eliminate the need for the stripper attendant to remove any waste at all from the pan. The added nozzle has proved beneficial in operation at this mill.

Although the device is not new, the present cost of cotton makes the waste saving and improvement in quality well worthwhile, according to mill officials.

Mill-Made. The extra tube was made and installed by the mill shop personnel. The purpose of the tube is to remove the strip of cotton loosened from the cylinder by the stripper. The comb knocks this strip of neppy trash off too early for the regular stripper nozzle to pick it up. The extended small

EXTRA VACUUM NOZZLE removes the strip of cotton loosened from the cylinder by the Abington vacuum stripper. This strip of waste is picked up by the doffer and is usually knocked off into the pan by the doffer comb. Partially assembled nozzle shown (right) with complete assembly already installed reveals simple construction.



nozzle (see illustrations) picks up this waste before it falls into the good white cotton which is put back into reworkable waste.

Before the nozzles were installed, the card stripper operative removed the waste cotton (that fell into the card pan onto the good white cotton) by hand and put it into his apron. However, he usually removed a considerable amount of good cotton along with the stripper waste, and this amounted to about eight or nine pounds per three-shift day. In addition to saving the good cotton, quality was improved by removing all of the neppy stripper waste. The card stripper sometimes missed separating the stock, and the neppy waste got into reworkable waste.

Installation. A hole is required in the regular Abington stripper nozzle to accommodate the additional smaller nozzle. Two screw holes are also needed in the regular nozzle.

A rubber gasket fits underneath the connection of the new nozzle to the regular vacuum nozzle. Two roundhead carriage bolts hold the new nozzle in place. The round heads are inside the tube to present a smooth surface for airflow and to prevent lint collection on sharp radii or rough surfaces. The holes and vacuum channel must be free from burrs to prevent chokes which may be caused by lint collection.

The end of the new vacuum tube is made separately and consists of a short length of ½" steel tube pinched to a ⅛" slot about ⅝" wide. The tube which accommodates the nozzle end is made of ⅝" steel tube (conduit) with a nut welded onto the side to serve in fastening the nozzle with a set screw. The adjustable nozzle provides the necessary movement to set the tube the correct distance for effective operation of the vacuum orifice.

Cost. Approximate cost of the nozzles was $1.50 each, according to a spokesman for the mill. Mill shop personnel made these accessories and installed them in their spare time; therefore, labor charges for making the parts was minimized.

How to Dye and Finish Dynel-Cellulosic Fiber Blends

BY F. C. RIPPNER AND H. K. TOWNSLEY
Textile Fibers Department
Carbide and Carbon Chemicals Co.

EXCLUSIVE

THE DYEING and finishing of blended fabrics composed of dynel and the cellulosic base fibers —acetate and rayon—has become an everyday occurrence in many dyehouses. The wide acceptance of these fabrics by the consumer is not only a tribute to the ingenuity of the dyers and finishers who regularly process these fabrics, but also a commendation to the manufacturers of dyestuffs and finishes, and the converters.

The progress in the dyeing and finishing of these blends has been rapid, and the difficulties of yesterday are little or no problem today. Thus this summary is meant to be a progress report to describe in brief the preferred dyeing and finishing methods as known at this time.

Equipment and Dyeing Practices. Blended fabrics which contain 20-35% dynel and the cellulosic fibers are readily dyed in conventional equipment. The use of a carrier is seldom required. For many purposes open becks may be used; and rope dyeing is generally preferred, because this method of dyeing brings out the inherent loftiness of the dynel fiber to best advantage in the finished fabric. The considerations which are normally observed by experienced dyers apply equally to dynel blends. Thus the use of deep dye becks for heavy fabrics is a desirable practice. Rope marks can be avoided by permitting the goods to cool slowly.

In the dyehouse, the dyeing of blends of dynel and cellulosic fibers generally follows the usual procedures employed for rayon-acetate fabrics. In judging the shade on these fabrics, the resin is always applied and fully cured on the hand patch so that the shade after finishing may be evaluated. This practice should also be followed especially carefully when dynel is present in fabrics containing these more familiar fibers. The reasons for this are made more clear in the discussion on finishing procedures.

Because the application of dyestuffs to dynel requires temperatures at or above 200 F to secure optimum fastness and money value of the dyes, the shade of the dynel is generally matched with the steam valve partly open, then the temperature is reduced to 180 F to match the other fiber or fibers in the blend.

After the dynel has been dyed at the higher temperature, practically no change of shade will take place even after prolonged exposure to bath temperatures of 180 or less. Dyeing of the dynel component of a dynel-rayon blend is often done in open equipment.

Dyestuff Selection. Before dyeing any fabric made from any fiber, the wise dyer gives careful thought to selection of his dyestuffs. Dyestuff selection has proved to be of utmost importance in the successful and practical dyeing of the "science" fibers.

As blends of dynel were developed, the extreme importance of the proper selection of the direct dyes for the rayon in the blend became more and more obvious. New problems became apparent because the upgraded fabrics had new performance requirements. One typical instance of the superior performance of the blend was exemplified in garments having durable pleats. In a number of instances the dyes on the rayon did not withstand the

conditions of the pleating process. Information on this problem was almost nonexistent. The situation was further complicated by the fact that the effect of unfixed resin is also aggravated under the conditions of pleating.

A thorough search of the market showed that, among the direct dyes that are fast to resin application, there are several that also are fast to the conditions of pleating. The lighter the shade, the more critical was the problem.

The AATCC tests for colorfastness to pleating can be used to select the direct dyestuffs. The dyestuffs should be tested in both a light and a medium shade on rayon. Dyestuffs that show little or no change in this test are generally satisfactory. Decating after the resin finish has been applied and cured has also proved to be an excellent means of stabilizing the color by anticipating in the finishing plant the small change which occurs even with the best of dyes during pleating.

Another problem was that a number of direct dyes tended to reduce upon prolonged boiling in closed dye becks. Dyestuffs that are to be used in closed equipment should be tested accordingly.

A blend of dynel and rayon can be dyed in a manner similar to a blend of acetate and rayon. Unions and cross-dyes are readily achieved. Acetate dyes are most commonly used for the dynel portion. These colors have excellent dyeing properties; they have good affinity and level well. If properly applied, most of them will yield dyeings on the dynel portion which possess good washfastness at 160 F, and selected dyes will show very good lightfastness.

Acetate colors or the neutral-dyeing premetallized colors for the dynel and direct colors for the rayon can be combined to provide a simple, one-bath method of dyeing dynel-rayon blends.

If the dynel is to be dyed to a deeper shade than the rayon, then the acetate colors to be applied should be tested for sublimation. This is advisable because certain acetate dyes will stain rayon by sublimation during resin finishing, decating, and pleating.

In the dyeing of a blend of acetate and dynel, again both unions and cross-dyeings can be achieved. A group of dyes that has become popular during the last few years for the coloring of wool and nylon is very useful. These are the neutral-dyeing premetallized dyes. A number of them have good affinity for dynel and low affinity for acetate. Acetate dyes in the same bath will dye the acetate deeper than the dynel and thus a good balance can be achieved. With certain shades—bright blues, navies, blacks, and greens—acid dyes will be needed to fill in the dynel.

The acid dyes are applied after the acetate colors have been exhausted from the bath. Reduced copper is used, if necessary, to increase the pickup of the acid colors on dynel. The copper sulfate and the reducing agent (preferably 4.0 parts zinc-formaldehyde sulfoxylate to 10.0 parts copper sulfate, anhydrous) should be dissolved separately and the cold solutions mixed just before use. This mixture should be added in small portions to the boiling dyebath.

While acetate dyes can be applied in open equipment, the premetallized dyes and acid dyes should be applied in closed equipment for best results. The color value of these dyestuffs will be enhanced by temperatures close to the boil.

Dyeing of a Three-Way Blend of Acetate, Dynel, and Rayon. The dyeing of a three-way blend of acetate, dynel, and rayon becomes somewhat more involved. However, unions and some cross-dyeings are possible. The simplest procedure would be, of course, a one-bath method using acetate colors for the acetate, neutral dyeing premetallized colors for the dynel, and direct colors for the rayon. In special cases where union dyeing in a navy or black shade is desired, the use of acid colors for dynel applied by the cuprous ion technique might be required.

Again, in these special cases selection of direct dyes is important, as some are affected by the copper and the reducing agent. Several direct dyes are available which have been successfully used in mill dyeings employing this procedure.

If the acetate is to be dyed to a deeper shade than the rayon, then the acetate dyes to be applied should be tested for sublimation, as mentioned earlier in the discussion of dynel-rayon dyeings.

The Finishing of Blends Containing Dynel. The finishing of fabrics made from blends of dynel and the cellulosic fibers is carried out in practically the same manner as that of fabrics composed solely of these fibers. The resin formulation should be capable of conferring dimensional stability on the rayon. A permanent contribution to a pleasing and full hand, together with other improvements, is imparted by the dynel in the blend. Thus the monomeric resins which polymerize within the rayon fibers and the reactant resins which cause a modification of the rayon should compose the major part of the formula while the polymeric resins may be kept to a minimum. A cationic softener is generally employed.

During the resin-drying step, tension in the filling direction and relaxation or overfeed in the warp direction will contribute to the dimensional stability of many constructions. Curing of the resin may be done at normal resin curing temperatures. During the curing operation, as well as in drying after washing, maximum stability requires that tension on the fabric be avoided.

The importance of proper curing of the resin on a rayon fabric is well known to the trade. The proper curing of resin-treated blends of dynel and rayon fibers assumes greater importance because of the effect of the heat on the appearance and other properties of the fabric. Dynel, as produced, is a semilustrous fiber that becomes dull during the dyeing operation and, as with other fibers, the dull form shows less color value than the bright fiber. The luster is restored and the full color is developed by heat treatment. As a practical measure, this color development occurs normally with the heat treatment given for the resin curing.

While the heat of curing de-

velops the full color of the dynel, it also causes the fiber to withdraw to some extent from the surface. Thus, a "double action" takes place, which materially alters the appearance of the fabric. Althougn temperatures of 250 F are sufficient to restore the luster of the fiber, higher temperatures are required to obtain maximum fabric stability. The usual temperatures of resin curing are sufficient to accomplish this second objective. The fabric must be completely dry before either action takes place.

A blotchy appearance, therefore, may be observed on fabrics which have had insufficient time in the dryer. This blotchy appearance can usually be corrected by a second run through the dryer, and can be prevented in succeeding lots by allowing more contact time in the dryer or by operating the dryer at a higher temperature.

Summary. The increasing use of dynel in blends with the cellulosic fibers has emphasized the importance of dyestuff selection, not only to meet the requirements of the finished product but also to meet more rigorous conditions which are often imposed on the new fabrics during garment manufacture. The introduction of new types of dyestuffs has simplified the dyeing of many blends.

Although cross dyeing has not been discussed, many combinations are possible through the obvious manipulations of choice of dyestuff and bath temperature.

In the resin finishing of these blends which contain dynel, it should be emphasized that normal curing temperatures and practices should be used because these higher temperatures are required to achieve maximum stability of the fabric.

The laboratories of the Textile Fibers Department of Carbide and Carbon Chemicals Co. are prepared to assist with the selection of procedures for specific cases.

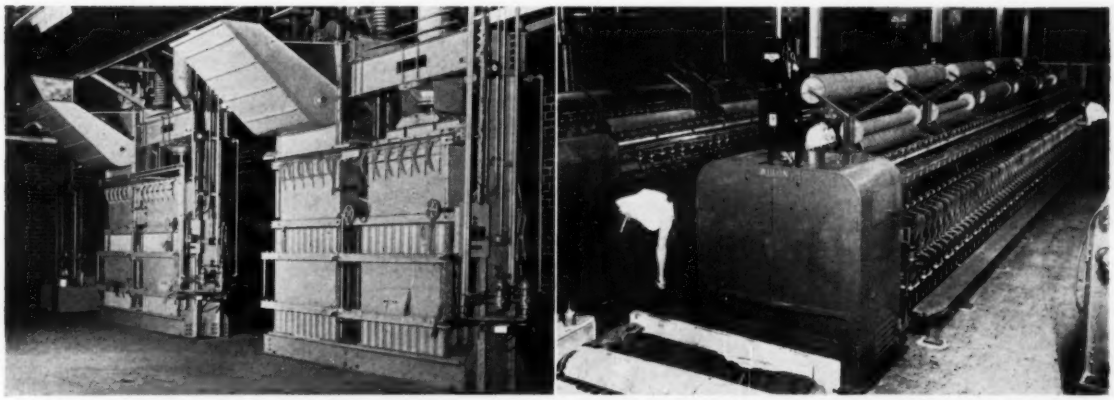
Amerotron's New Woolen Mill Dedicated

STAFF REPORT

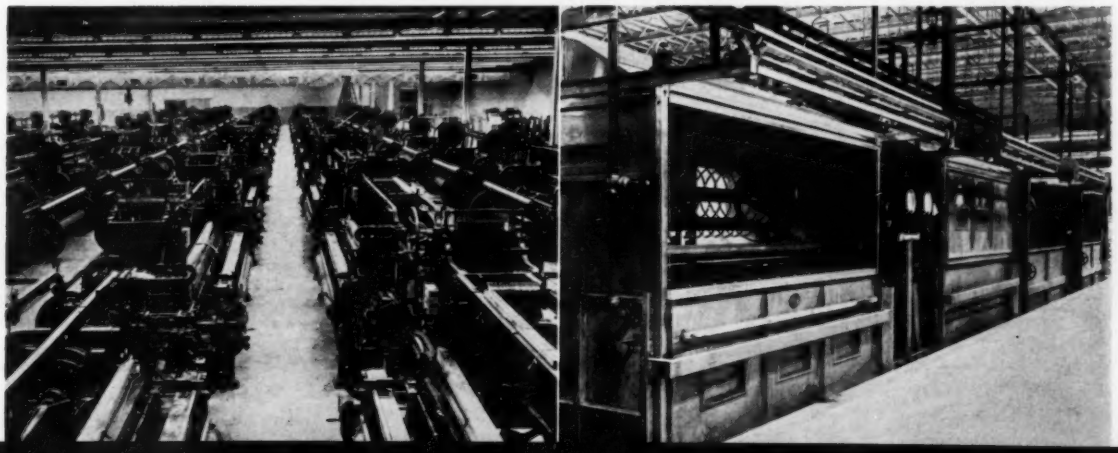
DEDICATION exercises for Amerotron Corporation's new $10-million woolen mill in Barnwell, S. C., climaxed a day-long celebration of the occasion on February 24, 1956. This, incidentally, was also the first anniversary of the merger of Textron, the American Woolen Co., and Robbins Mills.

Just nine months after consulting engineers were approached regarding plans for this completely integrated operation and only six months from the date of the ground-breaking ceremony, this 423,000 sq ft, windowless, fully

Left, double packing bale presses; right, woolen spinning frames in sample area.



Left, partial view of weave room with new looms in place; right, stainless steel piece dye kettles.



air conditioned and refrigerated mill was delivered to the owner.

Carding, spinning, weaving, dyeing and finishing operations are al housed under one roof and laid out on a single floor, with the exception of wool blending and storage on second-story ells.

Production goal is over $25-million worth of staple and novelty fabrics per year for use in men's and women's sport clothes, women's skirts, children's suits and dresses, men's and women's overcoats, and novelty apparel of all kinds. Plans are that approximately 2,500 pounds of scoured wool will be consumed per hour, or about 25 tons per day, in the manufacture of 1½ to 5 run yarns.

Installation of processing machinery and equipment, which was described as the latest available for economical production of woolen fabrics in the popular price field, had not been completed on Dedication Day (see accompanying photos which were made for the occasion)—only machinery in the sample area was in operation; however, production was scheduled to begin shortly.

Marion W. Beacham has been named operating head of the new plant. Technical manager is Theodore Williamson, Jr.

Spinners—Here's One Mill's Program for Buffing Rolls

Proper maintenance of synthetic covered top rolls will pay off in more even yarn and better running work.

BY RAMON PARKS

EXCLUSIVE

MANAGEMENT does not usually expect the spinner to make even yarn from uneven roving. He is expected, however, to make the best possible yarn from the roving which he receives from the card room. Just how successful the overseer of spinning is in accomplishing this objective is dependent upon the attention given to a number of details, including draft, twist, speeds, condition of spindles, rings, travelers, and rolls.

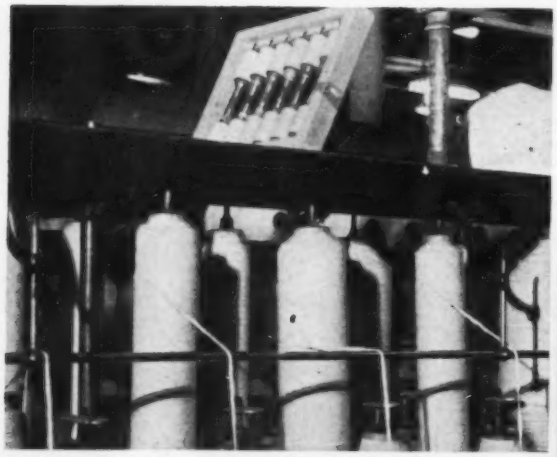
Here's how one mill handles the problem of buffing the synthetic covered top rolls. Attention given to the top rolls will pay off in more even yarn and better running work.

Although synthetic cots often are not so easily damaged as are leather covered rolls, occasionally a roll will be damaged to such an extent that bad yarn will result from its continued use. Then there are rolls which seem to wear faster than others. These rolls, of course, must be replaced.

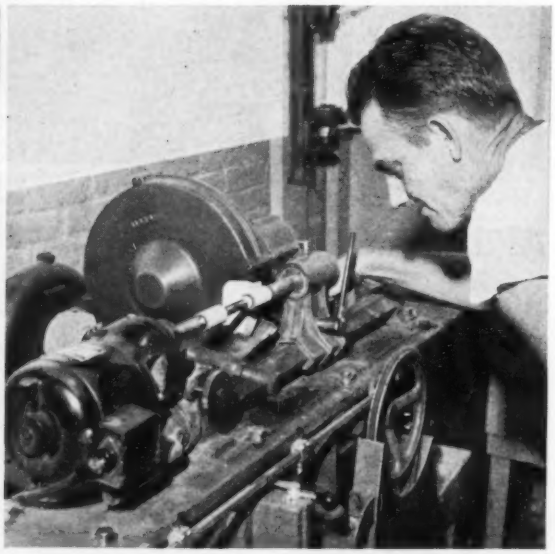
Replacement Rack. A rack mounted on the creel of each spinning frame holds six rolls and has been helpful in our mill (see accompanying illustration). When a roll has to be changed, the section man uses one of the rolls in the rack on that particular frame and replaces it with the damaged or worn roll.

At intervals, usually about once each week, the secondhand makes a round of all the frames and notes the number of good rolls remaining in the rack. When the racks are about filled with defective rolls he instructs the roll coverer to replace them with newly buffed rolls.

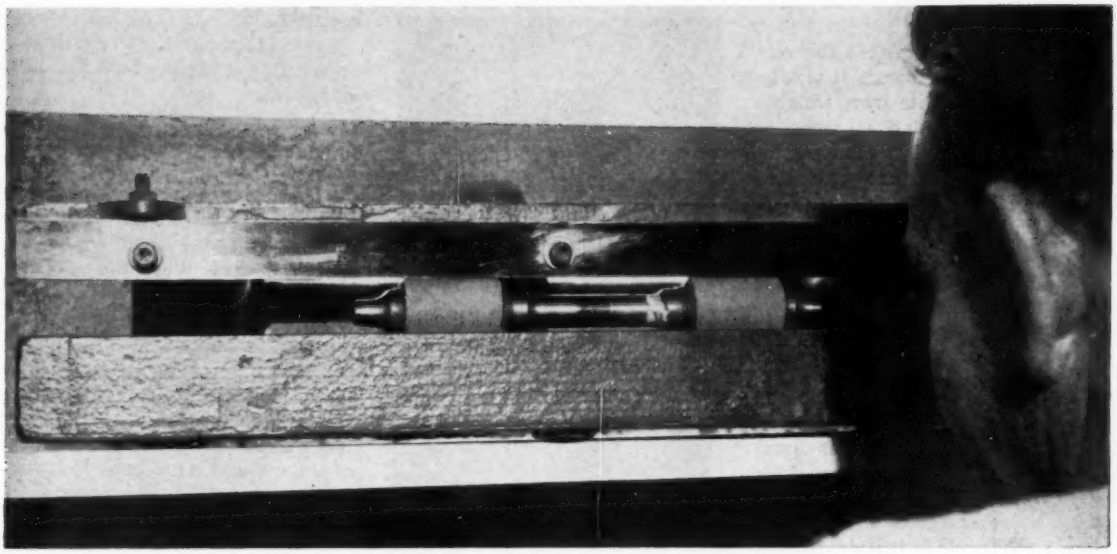
Records Serve. The roll coverer



RACK mounted on each spinning frame holds six rolls of correct diameter for that frame.



BUFFING MACHINE must be correctly set by roll buffer preparatory to rebuffing spinning rolls.



COT GAUGE is heavily weighted. Fluorescent light behind gauge makes silhouette for matching cots.

keeps a supply of rolls of different diameters and maintains Form No. 1 (see accompanying illustration), which is a record of rolls used on each frame, by section number. This record shows the date on which each frame was last equipped with either new rolls or rebuffed rolls and the diameters of the rolls on each frame. Then each round the operative makes is dated, and the number of rolls required to fill the racks on each frame is noted.

When it becomes apparent that any specific frame is using too many rolls, then that frame is checked to determine whether any unusual condition exists which would cause undue wear on the roll cots. Some conditions which cause excessive wear are bad steel rolls, worn nebs, and bad running work (with a lot of top roll chokes which were removed by the spinner with a hook). In any event, an effort is made to correct the trouble, and the frame is listed for a complete change of rolls.

Buffing Interval. The length of time that a frame will normally run before the rolls require buffing varies with local conditions, such as stock being run, speeds, and other factors; however, we obtain best results by buffing the rolls every twelve to fifteen months.

The buffing of rolls, while not a very complicated process, must receive careful attention to assure smooth, accurately matched cots.

The roll coverer must set the roll buffing machine correctly before buffing spinning roll cots. The roll coverer must also gauge the rolls to be sure that the cots are of identical size. The ceiling lights in the roller room are turned out and a fluorescent light behind the special, heavily weighted gauge is turned on so that even a minute difference in diameters of the two cots can easily be seen. Of course, if the cots do not match they are put back on the machine and buffed again.

Gauge. After the rolls have been buffed and checked to assure correctly matched cots, they are then gauged to find the diameter of the rolls. This is done with a special gauge made in the mill shop (see accompanying illustration). The gauge is marked off in ten increments: 1-1/64", 1-1/32", 1-3/64", 1-1/16", 1-3/32", 1-7/64", 1⅛", 1-9/64" and 1-5.32". Actually, only the fractions are shown on the

(Form No. 1)

BLANK MILLS

Weekly Check of Synthetic Top Rolls Used

Dept. Spinning #1 Kind of Rolls X Mfg. Co.

Section No. 3

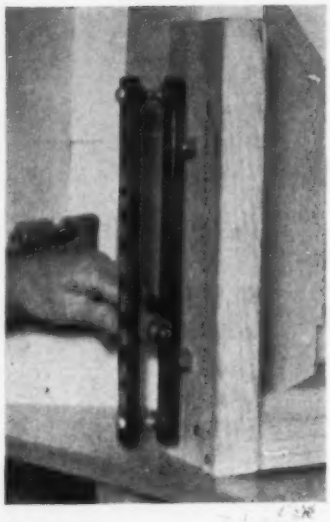
Frame No.	Date Installed	Dia. Rolls	No. of Rolls Used Each Week								Total 8 Weeks
			4/19/56	4/17/56	4/24/56	5/1/56	5/8/56	5/15/56	5/22/56	5/29/56	
61	3/1/56	1 7/64"	1	—	3	6	—	2	—	6	18
62	3/1/56	1 3/32"	—	—	2	1	1	3	—	2	9
63	3/2/56	1 5/64"	1	1	1	—	4	6	—	4	22
64											
[illegible]	3/16/56	1 9/64"	—	1	2	3	2	4	2	1	15
90	3/16/56	1 9/64"	—	1	3	3	2	6	1	1	17
									Grand Total		386

REMARKS: Check frames No. 63 & 77, excessive number of rolls used.

Signed Richard Roe
SECOND HAND

gauge.

The roll coverer places the roll in the gauge and lowers it slowly until it stops of its own weight. The point at which it stops is noted, and the roll is then placed in a container for that particular size roll. This process is continued, each different size roll being placed in a separate, properly marked container.



CHECKING ROLL DIAMETER
with mill-made gauge.

We do not use any rolls in the front line less than 1-3/64" in diameter. When rolls of this diameter are removed for rebuffing they are used in the back line. (We have a double apron drafting system, so the rolls in the middle line are knurled.) We do not usually rebuff rolls in the back line oftener than once every 18 months. This, of course, would depend upon local conditions and quality of yarn being spun.

Some other points in connection with rolls used in the back line are as follows:

(1) To prevent the use of rolls of less than 1-1/64" in the front line, the bosses are painted a distinguishing color, so if by any chance someone put any of them in the front line they would be spotted at once. When the rolls are finally removed for re-covering it is necessary, of course, to remove the paint with emery cloth, a stiff wire brush, or other means.

(2) No rolls of less than 1-1/64" are used even in the back line; we feel that so much of the resilliency of the cot will have been lost that further use will be detrimental to the quality of the yarn.

When the cots have been buffed down to 1-1/64" and are removed later, or have been damaged be-

Watch for These Developments Which Are in Store

EXTRACT*

THE MAJOR garment applications of Arnel during 1956 will be in washable, colorful women's blouses, dresses, slips, and panties in both woven and knitted fabrics.

New Fabrics. Fabrics based on 100% Arnel will continue to multiply and will find many applications because of color fastness, shrinkage, and wrinkle resistance, as well as excellent ironing properties.

However, the most important trend in apparel fabrics appears to be increasingly toward the "wash and wear" and "easy to care for" garments. Arnel fiber properties fit directly into this trend, because heat treated Arnel is relatively unaffected by hot wet treatment, dries rapidly, does not shrink, and is easily and safely ironed. Because Arnel can be heat set so that the geometry produced by the fiber and yarn in the fabric becomes the natural and relaxed configuration, it is possible to develop fabrics which will retain their original shape, texture, hand, drape, and appearance through many washes and at high humidities.

It should be understood that in addition to the intrinsic hydrophobic fiber properties, "wash and wear" fabrics require careful attention to optimum yarn and fabric construction as well as proper chemical and mechanical finishing. Very few such fabrics exist, so that it will be necessary to engage the concentrated efforts of the textile technologist, the fabric designer, the weaver, and the dyer and finisher in order to bring out new balanced fabrics. Only by this cooperative action can optimum fabric constructions for specific end uses combine versatility, performance, and styled appearance at a competitive price.

Blends. The introduction of blending fibers will greatly increase the possibilities for styling and performance, but will also increase the technical problems in dyeing and finishing.

A major development may be expected in Arnel/cotton fabrics based on both true blends and combination fabrics processed under the economical conditions of the cotton dyehouse. The incentive for the creation of Arnel/cotton fabrics will be the versatile styling possibilities of striped, checked, and plaid fabrics as well as blended fabrics which can be dyed in the piece. The combination of a hydrophobic fiber with cotton permits the achievement of the best attributes of both fibers.

Although no commercial Arnel/wool fabrics have appeared on the market, the excellent colorfastness, wrinkle performance at high relative humidity, and the glazing resistance as well as the desirable hand and draping properties of fabrics already evaluated gives promise to this blend in 1956. The damage to wool at the optimum heat treatment conditions suggests that pressure stock dyeing the Arnel, followed by blending the dyed fibers, may be the approach to getting Arnel into the woolen and worsted systems of processing.

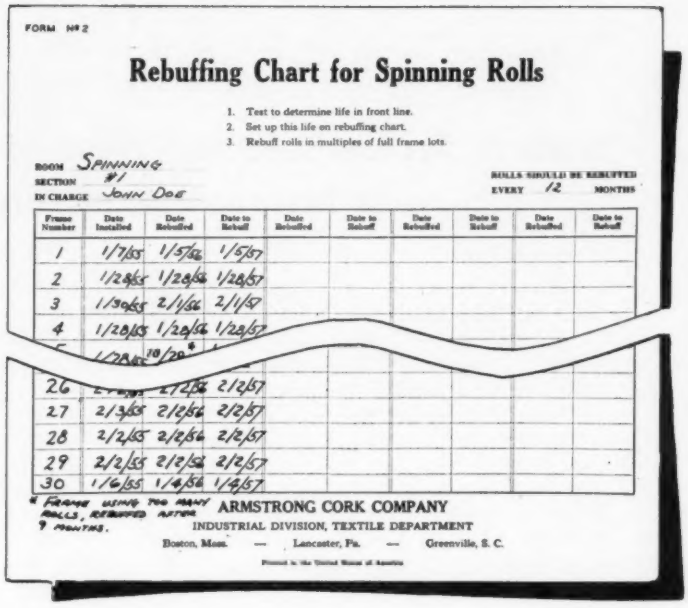
The major limitation in Arnel/nylon blended fabrics is the loss on heat treatment of a signifi-

*From paper presented to the Philadelphia Section AATCC during a recent meeting at the Drake Hotel in Philadelphia.

yond further service, the cots are cut off and new ones pressed on.

Form No. 2 is a permanent record of the rolls on each frame. This record is kept by section. It shows the frame numbers, the dates the rolls were originally installed, the dates the rolls are due for rebuffing, and the dates the rebuffing was actually done. The make and type of rolls may also be noted, if desired.

In actual mill operation the rolls will lose their identity, so far as any particular frame is concerned, as soon as they are removed for rebuffing. If a complete life history of several rolls were desired it would be necessary to mark the rolls in some way, possibly with different colored paint around the end of the bosses, so that their performance could be watched and proper records kept.



FORM № 2

Rebuffing Chart for Spinning Rolls

1. Test to determine life in front line.
2. Set up this life on rebuffing chart.
3. Rebuff rolls in multiples of full frame lots.

ROOM Spinning
SECTION #1
IN CHARGE John Doe

ROLLS SHOULD BE REBUFFED EVERY 12 MONTHS

Frame Number	Date Installed	Date Rebuffed	Date to Rebuff	Date Rebuffed	Date to Rebuff	Date Rebuffed	Date to Rebuff	Date Rebuffed	Date to Rebuff
1	1/7/55	1/5/56	1/5/57						
2	1/28/55	1/28/56	1/28/57						
3	1/30/55	2/1/56	2/1/57						
4	1/28/55	1/28/56	1/28/57						
5	1/28/55	10/20*							
26		2/2/56	2/2/57						
27	2/3/55	2/2/56	2/2/57						
28	2/2/55	2/2/56	2/2/57						
29	2/2/55	2/2/56	2/2/57						
30	1/6/55	1/4/56	1/4/57						

* FRAME USING TOO MANY ROLLS, REBUFFED AFTER 9 MONTHS.

ARMSTRONG CORK COMPANY
INDUSTRIAL DIVISION, TEXTILE DEPARTMENT
Boston, Mass. — Lancaster, Pa. — Greenville, S. C.

for Arnel Fiber During 1956

BY FRED FORTESS
Celanese Corp. of America

cant portion of the strength and abrasion resistance which the nylon contributes. This occurs primarily under dry heat treatment, and autoclaving processes can be developed to make available slack, shirting, men's suiting, and children's wear of satisfactory durability and performance.

The Arnel/Dacron blended and combination fabrics evaluated to date give promise that these two fibers can provide an economical basis for the development of washable slack and suiting fabrics. The union dyeing of this blend is limited at present by the fact that the best disperse yellows and reds for Dacron have poorer washfastness on the Arnel. Excellent blending is required since frequently the same dye on these two fibers appears to have a different hue.

Arnel/rayon fabrics may be expected to appear in large volume during 1956. The extensive experience gained in the last ten years with acetate/rayon can be largely applied to the achievement of washable Arnel/rayon fabrics of better performance.

Dyeing Costs. Reduction of dyeing costs without reduction in color fastness properties is essential if large volume production of the low priced Arnel fabrics is to increase during 1956. The relatively expensive gas fast, disperse blue dyes represent the greatest cost factor, especially in heavy shades such as navies. Any dyeing improvement which increases the exhaustion of dye and decreases dyeing time will improve the commercial position of Arnel in comparison with acetate and rayon.

Pressure dyeing facilities reduce the dyeing time to one to two hours. The development of low cost accelerants can be expected to help in standard jigs and winches. However, the development of continuous dyeing processes holds the greatest promise. The most direct approach appears to involve padding solubilized disperse dyes, uniform drying, heat treatment to drive in the color, and thorough scouring to remove a small amount of surface dye.

The incentive to reduce the cost of dyeing Arnel without the reduction in fastness properties will receive emphasis during the next year.

Durable Finishes. To date the silicone resin finishes have provided the only basis for imparting durable functional properties on Arnel fabrics. The lubricating properties of the silicones limit the hand of most Arnel fabrics to soft and silky, or mellow and round.

For a wide variety of end uses, such as slacks, dress suits, butcher linens, and men's suits, firm and crisp fabrics are required. Since Celanese has taken the position that hand and drape should be as durable to washing as color and garment appearance, these chemical and mechanical finishing treatments remain to be developed.

An extensive program is under way with manufacturers of textile chemicals as well as progressive dyehouses to adapt their products and processes to the non-reactive Arnel fiber. However, greatest progress may be expected by blending Arnel with such fibers as rayon and cotton, and by building up the hand on these by proper resin finishing.

William Skinner's Filling Winding Costs Went Down with Installation of this Machine

DRASTICALLY reduced cost in filling winding and subsequent operations is the most striking feature of the first installation of a high speed automatic filling winder. This initial installation is at the Holyoke, Mass., plant of William Skinner & Sons.

The new machine—called the Foster-Muschamp Model 66, and made by Foster Machine Co.—is fully automatic, which has made it possible for the mill to eliminate many of the factors complicating fair time allowances for costing and planning, so that costs can be projected with improved accuracy.

From records kept since the installation, the mill has found that one operator can tend 231 spindles on 100-denier Bemberg at 93% efficiency on the Model 66. She can handle 2827 supply packages and produce 10,741 pounds of yarn per 40-hour shift. Labor cost per pound of yarn quilled is $0.00446.

Machine Is Fully Automatic. The Model 66 approaches complete automation; the primary duty of the operator is to creel in the supply, and her task is therefore limited by the number of supply packages she must handle in a given cycle, less allowances for machine interference, personal time, yarn breaks, cleaning, fatigue, etc. All operations of the machine except creeling and piecing up ends are automatic, including pinboarding of the bobbins, and the operator can therefore confine her attention to maintenance of quality. Attention need not be diverted to supervision of tasks which are better done automatically. The result is high productivity and low operating costs.

Each spindle of the Model 66 operates independently except for the drive, therefore it is possible to determine a cycle of operations regardless of the fact that several different counts and colors may be running on the machine at the same time. For over-all cost comparisons, of course, it is necessary to compare identical data on preceding and following operations, as well as on the winding operation.

Starting Tail Eliminated. Skinner officials point out that an important innovation on the Model 66 is the elimination of the starting tail. This is accomplished by a device which traps the yarn alongside the driver during the transfer cycle. The end is then released during the first few revolutions, when the bobbin begins to wind, burying the end in the first few wraps of the bunch.

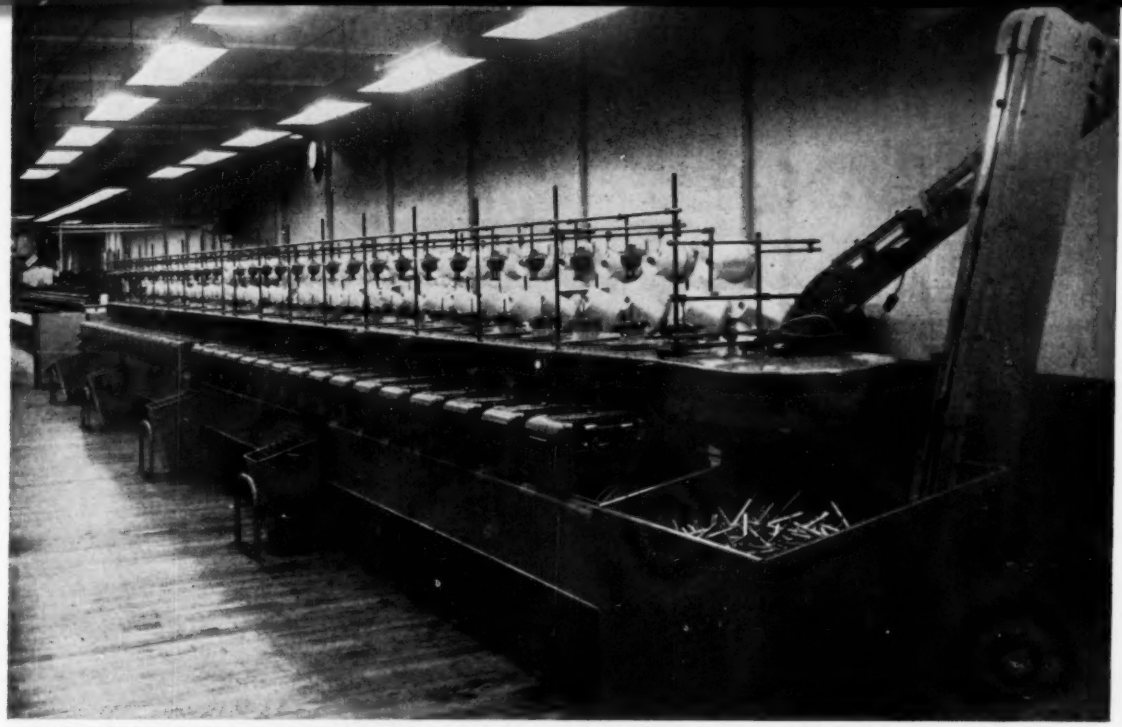
Production. Time studies made at William Skinner & Sons show that an average operator can creel in a 3.8-lb cone of 100-denier Bemberg in 0.28 minute, and tie in 1% breakbacks in 0.12 minute each. Cleaning, other duties, and personal time account for another 9.0876 minutes, adding up to a total service time of 9.1161 minutes per spindle hour.

Details of the time studies are given in an accompanying table.

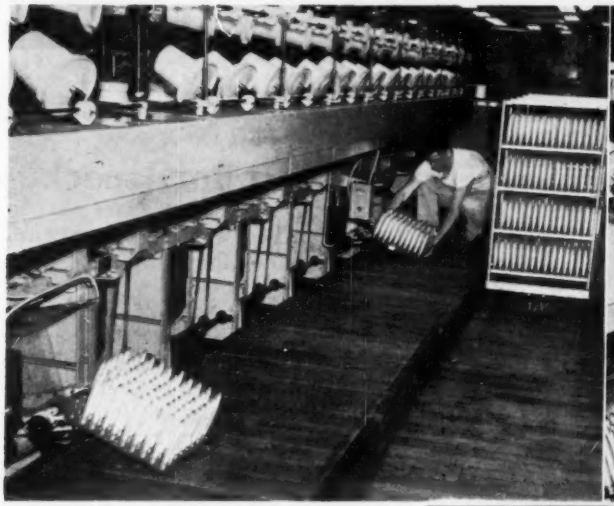
SPECIFICATIONS AND OPERATOR DUTIES—ACTUAL TIME

Winder: Foster-Muschamp Model 66, spindle speed 15,000 rpm; Yarn: 100/45/5T Bemberg

	Specifications	
1.	Lb per quill	.07
2.	Lb per cone	3.8
3.	Quills per cone	54
4.	Yards per quill	3125
5.	Winding time per quill (min)	3.565
6.	Lb per spindle hour 100%	1.176
7.	Quills per spindle hour 100%	16.83
8.	Lb per spindle week (40 hours)	47.04
9.	End breaks per quill	.01
	Tender Service Time in Minutes	
10.	Unwrap cones and place on creel deck	.12
11.	Repair breaks	.12
12.	Creel in supply	.28
13.	Magazine pinboards	.08
	Lost Machine Time per Spindle Hour in Minutes	
14.	Average wait for end break service	3.54
15.	Fixing time	.125
16.	Cleaning time	.0625
17.	Total	3.7275
18.	Machine Eff. (60 — line 17 ÷ 60)	93.8%
	Machine Time Per Quill in Minutes	
19.	Winding time	3.465
20.	Transfer time	.10
21.	Service end breaks (line 9 × line 11)	.0012
22.	Wait for end-break service (line 9 × line 14)	.03465
23.	Fixing time (line 15 ÷ line 7)	.007
24.	Cleaning time (line 16 ÷ line 7)	.003
25.	Total	3.61085
26.	Net quills per spindle hour	16.61
	Attendance Time per Spindle Hour in Minutes	
27.	Service end breaks (line 26 × line 21)	.0199
28.	Creeling (line 26 × line 12 ÷ line 3)	.086
29.	Unwrap cones (line 26 × line 10 ÷ line 3)	.037
30.	Magazine pinboards (line 26 × line 13 ÷ 80)	.0166
31.	Cleaning time (line 16)	.0625
32.	Total	.2220
33.	Personal, idle and off job, 15%	9
34.	Proposed spindle assignment (51 ÷ line 32)	231
	Weekly Production—40 Hours	
35.	Quills per spindle (line 26 × 40)	664.40
36.	Lb per Spindle (line 1 × line 35)	46.50
37.	Lb per operator (line 36 × line 34)	10,741.50
38.	Operator rate—40 hours	$48.00
39.	Cost per lb (line 38 ÷ line 37)	$ 0.00446



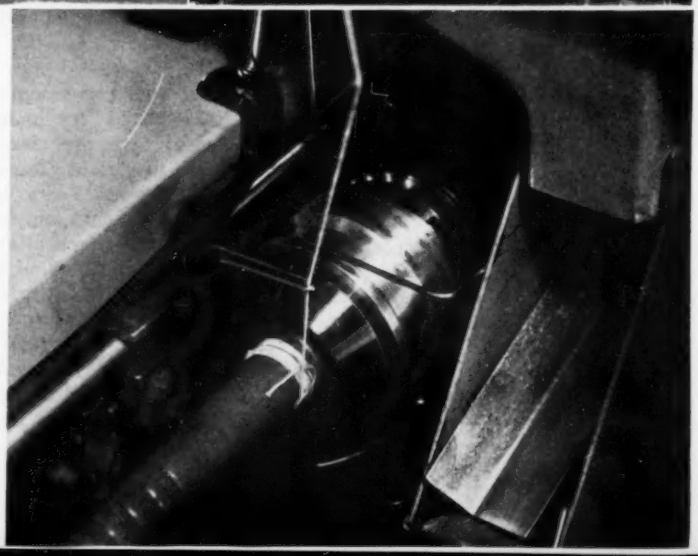
OVER-ALL VIEW of the Foster-Muschamp Model 66 filling winder at William Skinner & Sons' Holyoke, Mass., plant.



PINBOARDING OF THE BOBBINS (above, left) is automatic; photo shows loaded pinboards being removed from rear of machine.

MAGAZINE CREEL (above, right) is easily loaded; cone holder swings back for creeling and doffing.

STARTING TAIL (right) is eliminated by trapping yarn alongside the driver during transfer cycle; end is then released during the first few revolutions, when the bobbin begins to wind, burying the end in the first few wraps of the bunch.



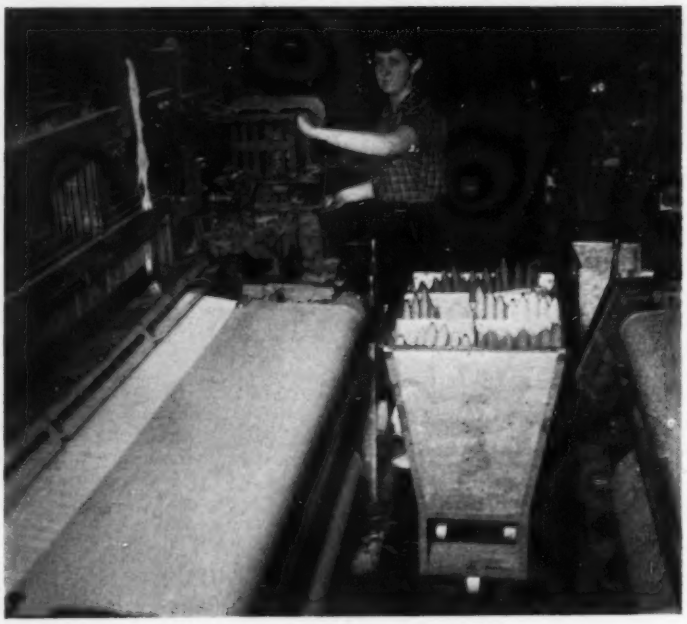
Sectional Filling Truck Handy In Fancy Weave Room

STAFF PREPARED

EXCLUSIVE

THE MILL-DESIGNED truck shown in this photograph contains separate compartments for different styles of yarn. In this illustration, the same truck holds five different yarns; others are adapted to accommodate up to eleven.

Used in the weave room of a New England worsted mill, it makes the job of loading magazines with filling easier on looms requiring yarns of several different colors and counts.



LESS MIXED FILLING has been the result since trucks like this were provided, and battery hands like the trucks too.

This Four-Purpose Coating Range Eliminated a Bottleneck

A return pass oven set in tandem with a flexible awning converting unit cuts processing time to 55 seconds.

STAFF PREPARED

EXCLUSIVE

FOR MANY YEARS the Hamilton, Ontario, plant of Cosmos Imperial Mills Ltd. has been converting part of its duck production into awning cloth by painting either solid colors or stripes on the goods. Until a short time ago, this operation was always a bottleneck: Drying at its best was performed on a festoon dryer in a heated room and took about 24 hours. Today, after a development period of 1½ years, the mill has in operation a set of equipment that does the job in 55 seconds.

Incorporated in this set is a four-purpose coating unit which serves to handle cloth in the following ways by selection of the appropriate route through the machine:

1. Painting striped patterns.
2. Painting a solid color face.
3. Padding a finish to one side of the cloth (back-filling).
4. Printing the back of painted goods.

Materials. Two components are generally required for painting and printing; both are manufactured within this plant. The cloth is generally an 8-ounce army duck, off loom at 32¼ inches and finishing 31 inches. In preparation for converting, it is dyed either pearl gray or khaki to prevent grinning of white cloth through any cracks in the finished awning.

The paints used are usually a combination of an acrylic with an oil. This formulation was devised to achieve fast drying and prevent crocking.

The Four Jobs. Reference to the accompanying schematic diagram will describe the general construction of the unit and the alternate paths of the cloth through it.

When painting, either a floating knife or a coating head is used. The former consists of a trough, slotted at its bottom, and is used when a solid color is to be painted; the coating head consists of a number of troughs, one for each color used, slotted at their bottoms to conform to the placement of each color in accordance with the pattern being painted. Up to five colors can be painted at one time. In both methods, paint is fed to the troughs by gravity from storage tanks. Coating is done on the knife-over-roller principle.

Padding is conventional and is used when back-filling is required. It is important to note that only

one of the four alternatives can be performed during any one pass through the machine. This limitation is based on the need to send each coating run through the dryer before another type is applied.

Printing is done in a conventional manner on a four-color machine; i.e., by contact with an engraved roll. Paint, however, is used instead of a dyestuff or pigment base print paste.

Drying. The coated cloth is dried in a gas fired, two-section, return pass oven which is 40 feet long. Each section contains its own combustion chamber and circulating fan. Temperatures are thus controllable up to 350 F.

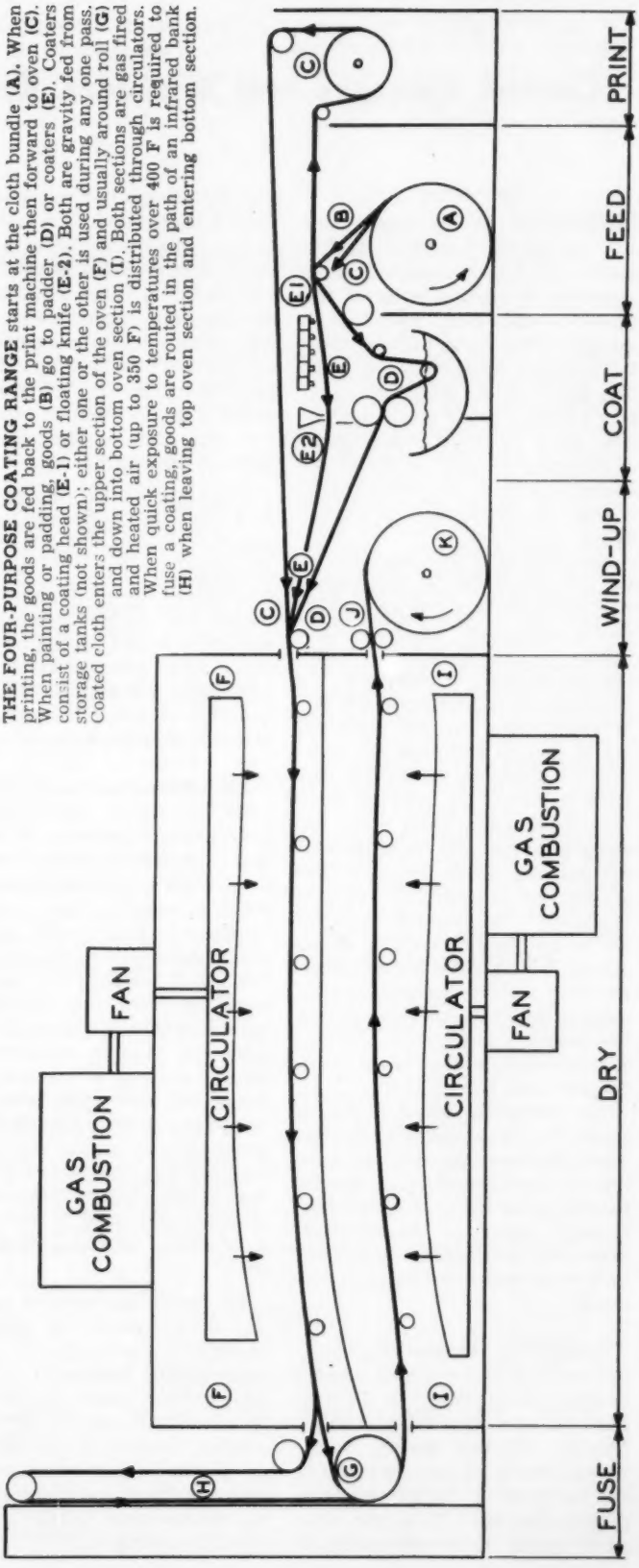
The dividing section of the oven is curved downwards at its end, and normally the goods leave the oven at that point, pass over a roller and re-enter the bottom section of the oven. The coated and dried cloth leaves the bottom section at the front of the oven, passing through water-cooled rolls and onto the cloth wind-up.

When a coating is used that requires a fast, high temperature exposure in order to fuse it, the cloth is exposed to a Chromalox infrared unit. This is positioned at the end of the dryer; the goods are routed across its surface before being returned to the bottom section of the oven.

Drive. All machine drives are originated at a single motor capable of a six-to-one speed variation. Surface speed of the cloth running through the synchronized unit is usually 90 feet per minute.

Consumer Research. In preparing cloth for awnings as described in this report, two new requirements have been satisfied by altering and adding to the process. One is based on the desire of the consumer to feel something soft when buying an awning. Paint formulation has been correspondingly altered to satisfy this request.

The other considers the desirability of looking at a design from beneath the awning and also to cover up making-up marks. This motivated the printing procedure.



THE FOUR-PURPOSE COATING RANGE starts at the cloth bundle **(A)**. When printing, the goods are fed back to the print machine then forward to oven **(C)**. When painting or padding, goods **(B)** go to padder **(D)** or coaters **(E)**. Coaters consist of a coating head **(E-1)** or floating knife **(E-2)**. Both are gravity fed from storage tanks (not shown); either one or the other is used during any one pass. Coated cloth enters the upper section of the oven **(F)** and usually around roll **(G)** and down into bottom oven section **(I)**. Both sections are gas fired and heated air (up to 350 F) is distributed through circulators. When quick exposure to temperatures over 400 F is required to fuse a coating, goods are routed in the path of an infrared bank **(H)** when leaving top oven section and entering bottom section.

Cotton Spinners and Breeders Review their Problems

STAFF REPORT

INDICATIVE of the accomplishments of American textile machinery manufacturers in their endeavor to keep abreast of the times is the fact that today's modern print cloth mill requires 3.6 per cent fewer spinning spindles and 13.98 per cent fewer manhours for the same given production as a so-called conventional 40,000-spindle mill, according to Elmer J. McVey, vice-president in charge of sales of Saco-Lowell Shops.

Speaking as a representative of the American Textile Machinery Association to the 200 cotton industry delegates attending the Delta - Council - sponsored cotton Spinner-Breeder Conference in Charlotte, N. C., on March 7-8, Mr. McVey pointed out that the number of pounds produced per manhour in a modern mill today has been increased by 16.3 per cent "We in the machinery field are going to continue to serve the textile industry in the best way that we possibly can," Mr. McVey said in closing. "With added emphasis are we all going to continue in our efforts to supply the textile industry with the most modern equipment of high productivity and at the lowest possible cost. This is our objective, and we shall never deviate from it."

The American Cotton Manufacturers Institute and the Combed Yarn Spinners Association were hosts to the meeting which was the twelfth in the series of annual conferences aimed at the improvement and development of cottons to more nearly meet mill requirements.

Competitive Properties. Speaking on "Cotton Properties Needed to Meet Competition," T. D. Truluck, manager, Cotton Department, Deering Milliken Service Corp., listed areas in which cotton should be improved to better its competitive position. Citing the price advantage of rayon over cotton, he said that cotton had much to gain from a lower price, but that most of the gains would be of a long-range nature. "What is needed is a price policy founded upon steadily declining cost of production, which will make both our customers and competitors believe that in future years the price of U. S. cotton is likely to trend lower as compared with the price of competing materials," Mr. Truluck stated.

Other factors listed by Mr. Truluck included longer staples, uniformity of staple length and fiber maturity, strength, fewer neps, precautions to eliminate foreign matter and contamination of lint cotton, improved packaging of the cotton bale, better draping qualities, luster, and preservation of the qualities of cotton in harvesting and ginning procedures.

Fiber Research Needed. Dr. Kenneth L. Hertel, Fiber Research Laboratory, University of Tennessee, called for increased research toward the development of instruments to measure fiber properties. "Cotton is now facing genuine competition," Dr. Hertel said. "The fact that it is still in the running is sound evidence that it still has some superior qualities. Its consumption is not increasing as rapidly as some of the man-made fibers; but, in a sense, it has held its ground without research. Research is just getting started and may appear to be confusing rather than helpful, but the problems are complex and need to be broken down into simpler manageable ones."

Dr. Hertel also pointed out that the skilled senses of sight and touch in the cotton industry have accomplished wonderful works of art, but these senses must be aided by scientific knowledge and instruments if cotton is to have its rightful chance to succeed in competition with man's constantly improving efforts based primarily in the scientific laboratory.

Quality Changes. Tracing the changing qualities of cotton consumed in the United States from 1930 through 1954, E. J. Overby, director, cotton division, Agricultural Marketing Service, U.S.D.A., pointed out that there has been a fairly steady improvement in average staple length, although the production and use of long staple upland cotton has decreased. "Looking at the supply for the last 30 years, we find that cotton shorter than one inch has declined from three-fourths of the total 30 years ago to about one-fourth presently. On the other hand, supplies of staples one inch through 1-3/32 inches have increased from about one-fourth of the crop to nearly three-fourths," Mr. Overby said.

He also said that U.S.D.A. records beginning in 1928 have shown a decline in the disappearance of Good Middling and Strict Middling from more than 7 million bales in 1928-29 or about one-half of the total to only 1½ million or one-tenth of the crop in recent years. Strict Low Middling is now the average grade of the crop and the production and use of Low Middling has increased, according to Mr. Overby.

Improvements Seen. Mr. Overby pointed out that breeders, farmers, merchants, and spinners have taken great strides in increasing efficiency and that the output per man throughout the industry has kept pace with the upward rate prevailing in our economy generally. He said that cotton available for consumption by domestic mills is likely to improve more rapidly in the future than it has in the past.

"Mills are in a better position than ever to specify their quality requirements in terms that the breeder, the farmer, and the merchant understand and can measure. Mills are probably more conscious of their requirements and more specific in their demands than

ever before. These demands are being met by the progress in new techniques of both production and marketing.

"I think that we have every reason to believe that the next 25 years will see more startling developments than were produced by the last generation. The future for cotton lies in the alert and vigorous application of the findings of science, and I believe the cotton industry is in a much better position than ever before to make such application," Mr. Overby concluded.

Recent Wash and Wear Developments

BY HECTOR C. BORGHETTY
Head, Textile Chemical Development
Rohm & Haas Co.

True wash and wear in cotton goods refers to a finish which imparts crush resistance and which is durable to washing; another key requisite is the fabric's ability to resist the effect of chlorine.

Improvements over early technology in the mill in achieving these results have been considerable and include: (1) selection of loosely woven, open fabric constructions for the finishes; (2) use of a metallic salt as catalyst; and (3) replacement of thermoset resin content with an equivalent amount of thermoplast resin.

ABSTRACT*

MANY finishers of cotton fabrics have recently found themselves in difficulty when they could not meet the physical specifications of tear, tensile, abrasion, and wear established for fabrics destined for garments. Such difficulties can be avoided by control of the conditions of catalysis and particularly by the reduction in the amount of thermosetting resin used.

Normally a reduction of 20 per cent raises the tensile strength by 2 to 4 pounds on a fabric having a breaking strength of 25 pounds. In order to compensate for the loss in wrinkle recovery caused by the reduced amount of thermoset, the thermoplastic resin must be added.

A typical formulation in Table I shows the amount of resin normally used on 80 x 80 cotton fabric, against a recommended formulation that incorporates a thermoplast in place of a portion of the thermoset. The correct additions of catalyst, penetrant, and softener should also be present in these applications.

An example of what can be expected is given in Table II which shows the improvement in crease recovery achieved by adding a soft thermoplast to a standard formulation based on a reactant resin padding solution applied to cotton 80 x 80 fabric at 75 per cent retention.

Each type of fabric requires an optimum formulation according to specifications of physical qualities, crease recovery, durability to washing, soil redeposition, and type of finishing equipment. The selection of the thermoplast is influenced by these factors as is also the thermoset.

The thermoplastic resin is nonnitrogenous and does not affect the chlorine resistance of the fabric. It is known that softer thermoplasts impart a greater degree of crease recovery and are, therefore, preferable for use with thermosets. Soft thermoplasts carry a detriment in terms of running conditions on padders, guide rolls, and drying units, where they tend to stick and require special precautions such as immersion of the lower roll of the padder in the liquid, tight squeeze, and rapid passage in the drying units.

An important improvement in the running qualities of thermoplasts is available by the addition of silicone emulsions and of nonionic surfactants. The former contribute good running by eliminating the tackiness on the pad roll, while the latter function by improving the stability of the padding solution. The silicone resin, in addition, acts as a softener for the fabric and as a lubricant during the sewing operation.

TABLE I

Standard Formula (lb per 100 gal at 75% pick-up)	Suggested Formula (lb per 100 gal at 75% pick-up)	
Reactant (50%)*	Reactant (50%)*	Acrylic Dispersion (35%)**
85	65	40

* sold as Rhonite R-1 ** sold as Rhoplex S-1
Rhonite and Rhoplex are trademarks of Rohm & Haas Co.

TABLE II

	Crease Recovery (°) Before FSW*		Tensile (1" strip) Before FSW*		Trapezoid Tear (lb) Before FSW*	
Treatment	Warp	Filling	Warp	Filling	Warp	Filling
10% Reactant (50%)	111	104	22	20	1.7	1.3
10% Reactant (50%) 5% Acrylic dispersion (36%)	128	117	23	18	1.6	1.3

* Full, Sanforized Wash

*The body of this abstract is quoted directly from a paper, "Wash and Wear—Cotton Fabrics," presented before the Philadelphia Section, A.A.T.C.C., March 2, 1956, by Mr. Borghetty.

Construction and Weave Are a Big Part of Fabric Hand

Here are some practical formulas for comparing the densities of fabrics, for determining densities of proposed new fabrics, and for making sure that selvages will not cause trouble in weaving.

BY GEORGE SONNENBERG

EXCLUSIVE

THE PRACTICAL designer knows that other elements of cloth construction besides yarn count and picks per inch can be changed to alter the hand of a given fabric. For example, a certain fabric woven in a two-harness weave will not have as light a feel as a fabric woven with a four-harness weave, even though the two have the same weight per square yard, and all the other elements of construction are the same.

What has happened is that cloth density has been changed by using a looser weave. This well known fact is utilized in weaving very heavy constructions, since a loose weave takes up a greater number of ends or picks without causing trouble.

Determination of Cloth Density. The appearance of a two-harness weave, cut along the warp and looking at the cut surfaces of the filling, is shown greatly magnified in **Fig. 1.**

Linear warp density can be expressed as the ratio of the space occupied by the yarn to the remaining space. If no space is left between the diameters, then the density is 100 per cent, or as a factor, 1.0.

$$WL = \frac{Df + DW}{df}$$

where:

WL=Linear warp density
Df=Diameter of filling yarn
DW=Diameter of warp yarn
df=Distance from center to center of filling

or, since df is the inverse of picks per inch (ppi):

$$WL = (Df + DW) \times ppi$$

The same conditions prevail for a cut along the filling through the warp ends, as shown in **Fig. 2.**

$$FL = \frac{Df + DW}{dw}$$

where:

FL=Linear filling density
dw=distance between warp yarns

or, since dw is the inverse of ends per inch (epi):

$$FL = (Df + DW) \times epi$$

Cloth Density. The product of the linear warp density multiplied by the linear filling density is the cloth density (CD):

$$CD = WL \times FL$$

or:

$$CD = (Df + DW)^2 \times ppi \times epi$$

To compare linear warp density and linear filling density with cloth density, the first two must be squared to arrive at the actual warp and filling densities. For example, if in a certain construction.

$$WL = 1.05$$
$$FL = 0.78$$

Cloth density is:

$$1.05 \times 0.78 = 0.82$$

or 82 per cent.

A designer might want to know what portion of this 82 per cent is carried by the warp and what part by the filling. The warp density is:

$$1.05^2 = 1.1$$

or 110 per cent. The filling density is:

$$0.78^2 = 0.61$$

or 61 per cent.

This comparatively high warp density is balanced by a low filling density, resulting in a quite normal 82 per cent cloth density.

Cloth density is also the geometrical average of warp and filling densities:

$$CD = \sqrt{W \times F}$$

where:

$W = (WL)^2$
$F = (FL)^2$

Influence of Weave on Cloth Density. The figure for cloth density must be multiplied by a weave factor to arrive at the density for a specific fabric. As can be seen in **Figs. 3, 4,** and **5,** the weave factor is the ratio of the yarn diameters of a 1/1 weave to other weaves. **Table 1** gives the weave factors for some popular weaves.

For irregular and complicated patterns, such as crepes, the factor for every weave used has to be found, and the average taken.

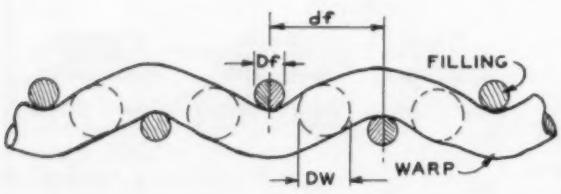


FIG. 1. Two-harness weave cut along the warp and looking at the cut surfaces of the filling.

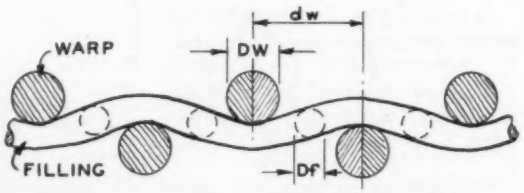


FIG. 2. Two-harness weave cut along the filling and looking at the cut surfaces of the warp.

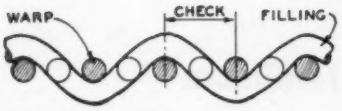


FIG. 3. Two-harness weave, cut through the warp. The density of the fabric is 100%, or 1.0.

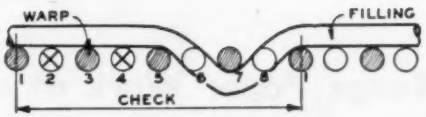


FIG. 4. Four-harness drill. The two yarn diameters marked "X" are eliminated, compared with plain weave.

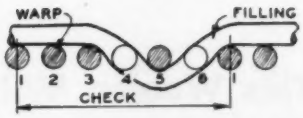


FIG. 5. Four-harness drill shown in actual density. The density of the fabric is 56.2%.

With such fabrics it is advisable to compare the CD of the selvage and of the body of the fabric. If far apart, they can cause trouble.

Normally, most fabrics will have a density of 100 per cent, with the exception of heavy canvas or duck. The weaving of such fabrics is not without difficulty. However, with loose weaves such as satins and drills it is possible to attain densities of over 100 per cent without any great difficulty. In this latter case the yarns are not held in a tight line, but crowd one on top of the other.

In the sample calculations which follow, the yarn diameters were calculated by the general rule that yarn diameter is the inverse of the square root of the number of yards per pound. Ashenhurst modified this formula by multiplying the yards per pound by a factor, K, which varies with the fiber. Following are some values for K:

Cotton	0.92
Linen	0.92
Worsted, fine	0.90
Worsted, medium	0.86
Woolen	0.85

Table 2 gives the diameters of some popular cotton yarn counts.

$$D = \frac{1}{K \times \sqrt{\text{yd per lb}}}$$

where:

D=yarn diameter in inches

First Example. Construction: Warp—9s, 68 ends per inch. Filling—15s, 40 picks per inch. Weave—3/1 (four-harness drill).

Warp diameter:

$$DW = \frac{1}{0.92 \times \sqrt{9 \times 840}} = 0.0125''$$

Filling diameter:

$$Df = \frac{1}{0.92 \sqrt{15 \times 840}} = 0.0097''$$

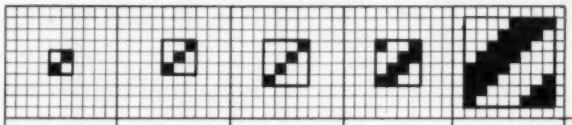
Linear warp density:

$$WL = (0.0125 + 0.0097) \times 40 = 0.688$$

Linear filling density:

$$FL = (0.0125 + 0.0097) \times 68 = 1.51$$

TABLE 1. Weave Factors for Some Popular Weaves



1/1	1/2	1/3	2/2	4/4	WEAVING PATTERN
1.0	5/6 = .83	6/8 = .75	6/8 = .75	10/16 = .62	LINEAR DENSITY
1.0	.70	.56	.56	.38	DENSITY FACTOR

TABLE 2. Yarn Diameters According to Ashenhurst's Formula

Cotton Count	Yarn Diameter, Inches	Cotton Count	Yarn Diameter, Inches
5	0.0168	13	0.0104
6	0.0154	14	0.0100
7	0.0142	15	0.0097
8	0.0132	16	0.0094
9	0.0125	17	0.0091
10	0.0118	18	0.0089
11	0.0113	19	0.0086
12	0.0107	20	0.0084

Cloth density:

$$CD = 1.51 \times 0.688 = 104\%$$

The cloth density in this example would be 104 per cent if the fabric were woven in a 1/1 weave. Some trouble could be expected in weaving such a fabric. Our sample, however, is a 3/1 weave with a density factor of 0.562. Thus:

$$CD = 104 \times 0.562 = 58.5\%$$

Second Example. Construction: Warp—16s, 51 ends per inch. Filling—10s, 38 picks per inch. Weave—1/1 sheeting.

Warp diameter:

$$DW = \frac{1}{0.92 \times \sqrt{16 \times 840}} = 0.0094''$$

Filling diameter:

$$Df = \frac{1}{0.92 \times \sqrt{10 \times 840}} = 0.0118''$$

Linear warp density:

$$WL = (0.0094 + 0.0118) \times 38 = 0.805$$

Linear filling density:

$$FL = (0.0094 + 0.0118) \times 51 = 1.08$$

Cloth density:

$$CD = 1.08 \times 0.805 = 87\%$$

Third Example. Construction: Warp—8.45s, 63 ends per inch. Filling—13s, 44 picks per inch. Weave—4/1 satin.

Warp diameter:

$$DW = \frac{1}{0.92 \times \sqrt{8.45 \times 840}} = 0.0129''$$

Filling diameter:

$$Df = \frac{1}{0.92 \times \sqrt{13 \times 840}} = 0.0104''$$

Linear warp density:

$$WL = (0.0129 + 0.0104) \times 44 = 1.03$$

Linear filling density:

$$FL = (0.0129 + 0.0104) \times 63 = 1.47$$

Cloth density:

$$CD = 1.47 \times 1.03 \times 0.49 = 76.5\%$$

Summary. A method has been described by which cloth density can be calculated from an engineering point of view. By this method, both construction density and weave density can be determined, and the formulas given are useful in practical fabric designing.

The principal applications of these formulas are in comparing densities of fabrics to be copied, determining densities of new fabrics, and comparing densities of selvages and body of a fabric.

This Woolen Mill Keeps Paper Work at a Minimum

Hang tags eliminate excessive bookkeeping and check on quality of goods in process.

STAFF PREPARED

EXCLUSIVE

A VISITING QM inspector recently was pleasantly surprised at the ease and speed with which the details of the raw wool content were picked up in the office of Strong, Hewat & Co., Inc., North Adams, Mass., from the number of a piece in process. This was of particular interest in view of the large and varied assortment of fancy suitings and coatings that are made by this mill.

Equally surprising is the simplicity of keeping these records and their dual purpose. The Strong, Hewat system also acts as a control on the quality of the material in process, starting in the dressing department and proceeding through drawing-in, weaving, perching, sewing and burling, wet processing, and finish perching.

An important feature of the setup is the elimination of departmental master record keeping; mill management feels that overseers are skilled technicians rather than record clerks, and have designed a piece ticket which bears all information necessary for these controls. The ticket accompanies the piece through all operations and is cumulatively filled in at department level.

Office Records

Works Order. Upon receiving a weaving order from its New York office, the mill first calculates the quantity of each type of stock required to dress the number of pieces ordered; this is kept in a loose leaf binder. A works order is made from this which shows requirements (including waste), lot number of stock to use, and the condition of the stock.

This order is made in quadruplicate: A yellow copy stays in the office, a pink one goes to the picking room, a white one to carding, and a blue one to the spinning department. Each contains information on its reverse side concerning machine settings and details so that future orders of the same style can be accurately duplicated.

A dye order is also issued containing the weight and color requirements. These orders accompany the lot until they reach the department to which they are written; each department retains the order when it has done its job.

Kardex System. Two Kardex file systems are maintained simultaneously with the orders described. The first is a control by work order on which spinning department yields are posted as against calculated requirements. The second Kardex record is a perpetual inventory of raw stock.

Quality controls exercised to this point include a rule which does not permit issuance of a works order or activation of the Kardex perpetual inventory until the raw lot has been examined and OK'd by the mill general manager. Another control by the manager is a tight tolerance of the dyed stock against the works order.

Once the yarn has been made and sent to the dressing department a master control is activated. This control charts each order's progress according to the number of pieces dressed, woven, finished, and shipped or held against it. Information entered on this control comes from each of the departments named each day, and requires about two hours to enter.

In addition to the progress of each piece being available, estimated weight and width are also posted on this control and are compared daily with actual figures which are posted from the same sources as are the progress entries. This information is used by the manager as a perpetual check for correcting variations of actual conditions of weight and width from those expected or estimated.

Mill Records

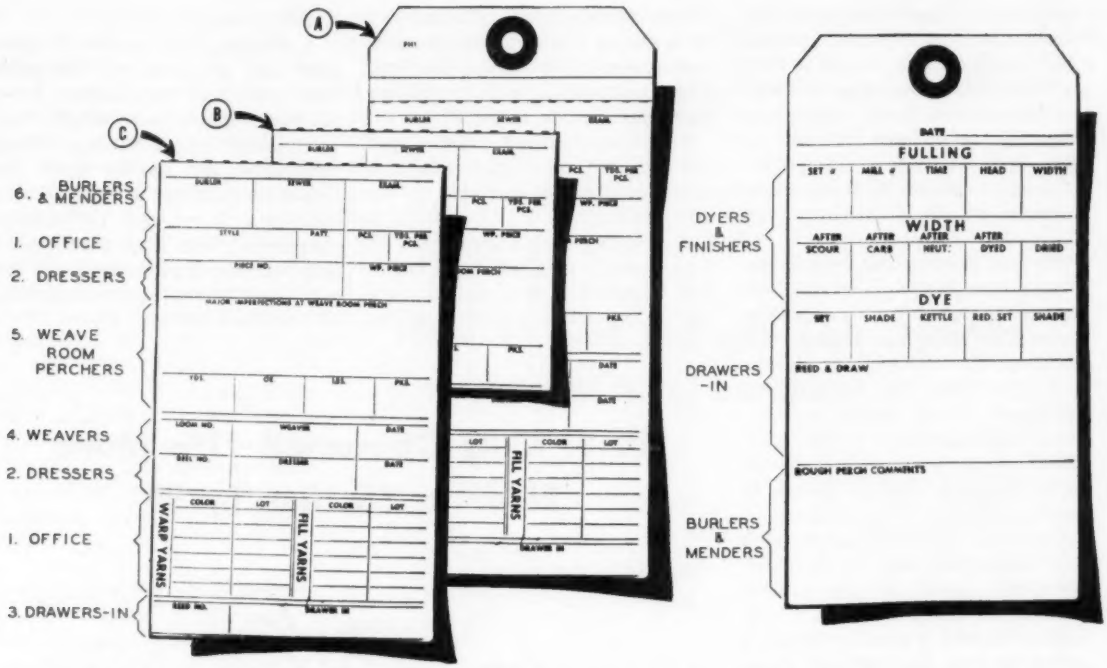
Information for master control sheets such as the one just described is in most mills picked up from each department either daily or weekly, depending on the type of operation. This usually means that each overseer must keep a list of all of the work that is completed in his department each day or week; if work consists of a large number of short cuts or pieces of a wide variety, this can pyramid into quite a long list and require considerable time.

With this in mind the tickets shown in the accompanying illustrations were devised at the Strong, Hewat plant. They are used as follows:

Dressing. The ticket reaches this department containing details of style number, pattern number, total pieces in the order, yards per piece, and the color and lot numbers of warp and filling yarns. The dressers warp from this information and enter a piece number which they assign. They also enter the position, by number, of the particular piece in the warp.

A ticket exists for each piece dressed and accompanies it right through the mill. The position of the piece in the warp is often useful information to have when checking back on a continuous imperfection such as a misreed at an inspection station — the weave room perch, for example. The overseer can, by seeing which piece is weaving in the loom, determine how much damage has been done, order corrections, etc.

Also entered on the ticket are identifying items such as reel number, dresser, and date. A list



THIS IS ABOUT ALL of the bookkeeping that the departments from dressing to finished wind-up have to keep in connection with a piece of goods. This ticket is placed with the piece in dressing; its front consists of the base ticket (A), a half carbon-backed sheet (B), and a full length carbon-backed sheet (C). Notes on illustration show which parts of the front and back of form are filled out, and by whom. Sheet (B) is detached and sent to the office the morning closest to the time it is finish perched; sheet (C) is handled likewise after finishing. Base ticket is replaced by customers hang tag at wind-up machine. Note that both sides contain spaces for technical data; this is used to achieve reproducibility and to trace causes of defects.

of the piece numbers assigned by the dressing department to each style dressed is submitted daily to the office and entered on the master control.

Drawing-In. When a warp has been drawn in all of the tickets covering each warp are marked with the name of the drawer-in and the reed number used. The tabulation of the reed number is an important check in tracing and correcting defects due to a faulty reed.

Description of the drawing-in draft, the number of the reed, and reeding plan are entered on the reverse side of the ticket.

Weaving. The tickets are hung on the loom in which the warp they represent is mounted; and as pieces are woven down and cut, the appropriate ticket is placed with the piece after the weaver enters loom number, his name, and the date.

Weave Room Perching. Perchers

AT FINISH PERCH this second ticket is made out. Percher enters data on ticket as noted on illustration, detaches carbon-backed sheet from base ticket and sends the former to the office in the morning. All office submits are used to chart progress and quality of goods in process for each piece on a master control. Swatch from finished piece is attached to reverse side of this ticket and later used to match up pieces of the same color and finish to make sure that customer gets as uniform a set of goods as possible.

enter major imperfections on the ticket; and record yards, pounds, picks per inch, and actual ounces per yard. Later, when this information is received in the office, it is compared with book records on these quantitative specifications, and corrections are made in manufacturing details if necessary.

Burling, Sewing, and Examining. Tickets consist of a cardboard base and two detachable carbon-backed sheets. One sheet is full length and contains all information on the face of the ticket; the other, or second sheet, is half length, and contains only that part of the ticket filled out by dressers and weave room perchers, and the names of burlers, sewers, and examiners.

The latter section is filled out at this point, and any rough perch comments made on the reverse side of the ticket. The half length carbon-backed sheet is detached (after burling, sewing, and rough examining) and each day's work is sent up to the office in this form.

From these half-sheets, the "pieces woven" column of the master control is marked.

Wet Processing. During finishing, certain details are entered on the reverse side of the ticket so that a permanent record is available of the manner in which each piece was handled. This information includes fulling set number, time, head, and width. Also the widths after scouring, carbonizing, and neutralizing, after dyeing, and after drying are recorded. If the goods are piece dyed, the set number, the shade, and kettle number are recorded.

After this operation, the top carbon sheet on the ticket is torn off and each day's work is sent to the office for recording in the control ledger under "pieces finished."

Finish Perching. From the ticket described to this point, the finish percher makes out a second ticket which summarizes the information recorded in the various departments to date, and includes allowances, remnants, seconds, remarks, and refinishing data. Also included are the percher's name and a warp and filling grab test tabulation.

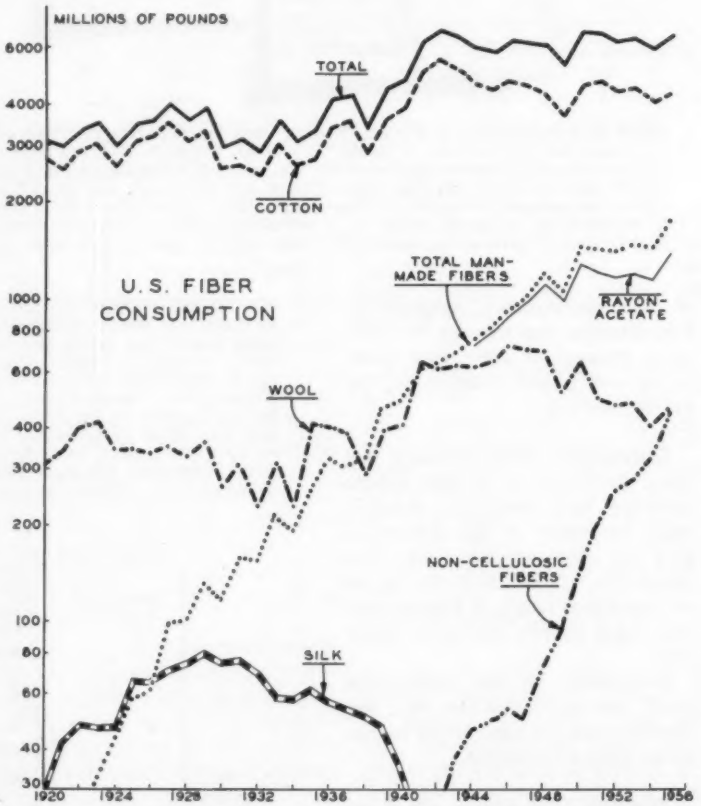
This ticket, also faced with a carbon-backed sheet, is completed by entering the date the piece is passed, cutting a swatch from the goods and attaching it to the reverse side of the ticket.

As finish perching is completed for a piece, the carbon-backed sheet is detached and sent to the office daily.

Both base tickets are replaced by a customer's hang tag at the winding machine; the tickets are placed on permanent file in the finishing department.

A shipping card is used to make sure that all pieces of the same style and color combination for a customer match each other. This is accomplished by cutting a small swatch of the sample from the finish perch ticket sample and attaching such swatches to the shipping card from each piece to be shipped. The appearance is, in this way, easy to check for uniformity of color and finish.

U. S. Mills Consumed 11% More Fiber in '55 than in '54



Courtesy "Textile Organon"

ACCORDING to the results of a Textile Economics Bureau study of United States textile fiber consumption, a total of 6,671,300,000 pounds of cotton, wool, man-made fibers, and silk was consumed by mills in 1955. This represents a gain of 11% over 1954 and the highest post-World War II year on record except for 1950 and 1951; consumption in those years was at a level of 6,824,000,000 pounds, due to the influence of the Korean conflict which induced greater mili-

tary purchasing as well as civilian "scare buying."

All fibers shared in the increased activity during 1955, the Bureau reported, and gains over the previous year ranged from 6½% in the case of cotton to 31½% for the non-cellulosic man-made fibers.

Cotton consumption amounted to 4,386,400,000 pounds and the non-cellulosic man-made fibers 431,-600,000 pounds in 1955. Wool consumption at 427,100,000 pounds was up 9½%; silk 7,200,000 pounds, up 12½%; and rayon and acetate 1,419,000,000 pounds, up 23% to establish the highest level on record. The 1955 consumption of the non-cellulosic man-made fibers was also the highest yearly total on record.

Long Term Consumption Trends. Man-made fiber consumption, which averaged 58,000,000 pounds a year in the 1920-1929 period, according to the Bureau, rose to 1,850,600,000 pounds in 1955, or more than a thirty fold increase. Cotton usage, which averaged 3,057,000,000 pounds in the 1920-1929 period, rose to 4,386,400,000 pounds in 1955, a gain of 43½%. Wool consumption rose from 358,-000,000 to 427,100,000 pounds over the period, an increase of 19½%. Silk deliveries on the other hand declined from an average of 57,000,000 pounds in the 1920's to 7,200,000 pounds in 1955, a decline of 87½%.

Several factors which have contributed to this condition were cited by the Bureau as follows:

1. A 44% increase in population;

2. Displacement of a natural fiber by a man-made fiber (e.g., the displacing of cotton by rayon in automobile tires);

3. Reverse displacement of certain man-made fibers by cotton (e.g., displacing of rayon by cotton in some types of women's apparel);

4. New markets for textiles (e. g., use of textile glass fiber for reinforcing auto bodies, boat hulls, etc.);

5. Larger per capita use of all textile fibers (i. e., over past 30 years the average home is more completely furnished with textiles, there are now more autos per capita and thus more textiles used therein, etc.).

Recent Per Capita Developments. According to the Bureau, during 1955 the "average American" consumed 36.5 pounds of textile fibers, an increase of 4.0 pounds over the 1954 per capita consumption level.

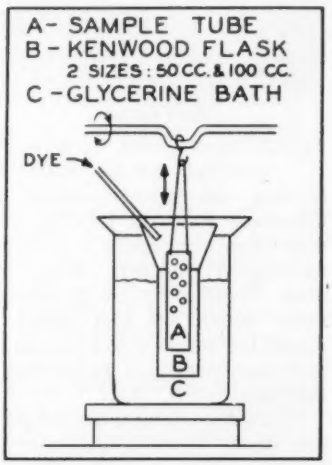
The 1955 total was comprised of 23.3 pounds of cotton, 10.3 pounds of man-made fibers, and 2.9 pounds of wool. All of these figures showed increases over the corresponding 1954 data, with cotton rising by 7½%, wool by 11½%, and man-made fibers by 25½%.

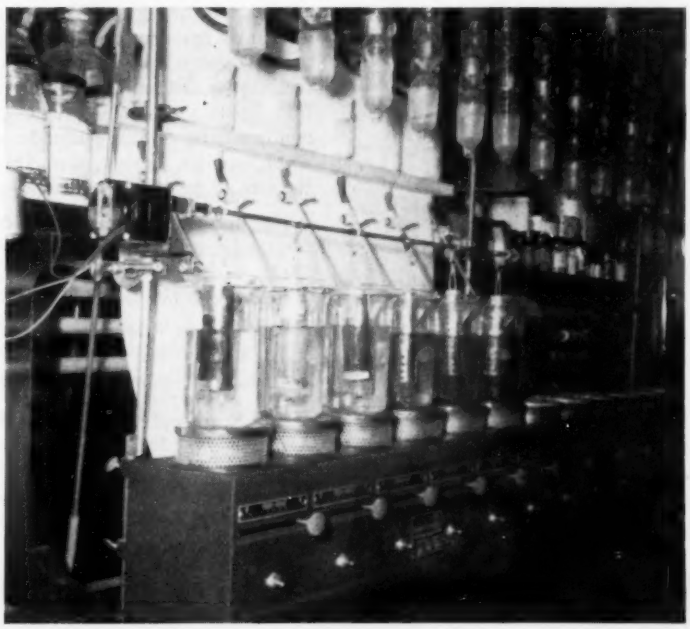
How to Get In-Ratio Lab Dyeings on Wool Samples

STAFF PREPARED
EXCLUSIVE

REPRODUCIBILITY of lab results in the dyehouse has always been a problem. One of the major causes for failure of a lab recipe to hit a shade in production has been the inability to simulate a dyehouse stock-to-bath ratio of 1:10 or 1:20 in the lab. Usually 5 grams of wool are entered in a lab beaker in a ratio of about 1 to 60 or 70.

This problem has been solved in the lab of Kenwood Mills Limited, Arnprior, Ontario, by the development of a lab dyeing machine that includes mechanical agitation





of the sample in a confined area.

The device, shown in the accompanying photo and drawing, consists of a rheostat-controlled hot plate for temperature control. On this are placed electrolytic-type beakers containing glycerine. In this bath is placed a specially designed dye flask (now known as the Kenwood Flask) flanged at the top to allow additions of liquor without disturbing the dyeing.

The wool sample is placed in a stainless steel sleeve, similar to those used as cores for yarn to be package dyed, and through a connector with a rotating bar the sleeve is given an up and down oscillating motion. The piston effect of the sample, so suspended in the dyebath and confined in the relatively small volume of the Kenwood Flask, properly submerges the wool and forces adequate dye liquor through the sample.

New Acrylic Fiber Available to Mills for Evaluation

STAFF REPORT

VEREL (pronounced Ve-rel') is a modified acrylic fiber developed and being produced by Tennessee Eastman Co. The producer does not classify it as an all-purpose or "miracle" fiber, but plans to direct its use to selected fields which are best suited to utilize the comfort, soil resistance, and muss resistance properties of the fiber.

Currently available in pilot plant quantities, Verel is produced in staple form in a denier per filament range of 2, 3, 5, and 8, semi-dull luster. Filament yarn is not currently available.

Commercial production will commence in October of this year, according to the producer who also supplied the following data:

Physical Properties. Some of the physical properties of Verel are: Tenacity, 2.5 - 2.8 grams per denier; elongation, 33 - 35 per cent; elastic recovery, 88 per cent @ 4 per cent elongation and 55 per cent @ 10 per cent elongation; specific gravity, 1.37; moisture regain, 3.5 - 4.0 per cent; wrinkle recovery, good; crease retention, good; maximum ironing temperature, 300 F.

Other functional characteristics of Verel include uniform whiteness of color in the natural state, flame resistance, and bulking ability when used in a combination of its heat sensitive and nonheat-sensitive forms. As a hydrophobic fiber, its relatively high moisture regain contributes freedom from static in processing, and comfort in fabric use; the fiber is soft, low in pilling tendency, mildew- and micro-organism resistant, and resists the effects of weathering.

Chemical Properties. Verel is affected insignificantly by Clorox, hydrochloric acid, nitric acid, dry cleaning solvents, phenol, aqua regia, or sodium hydroxide.

Manufacturing. Evaluation on various spinning, slashing, and weaving systems has indicated that no special devices or unusual techniques are required in processing Verel. The fiber has been evaluated in spinning blends with wool, viscose, cotton, and Estron. Results of spinning tests indicate:

100 per cent Verel—40s/1 commercially practical. The range of 27s/1 to 34s/1 attainable with 3 denier staple 1½ to 2½ inches long.

50 per cent Pima Cotton/50 per cent Verel—68s/1 commercially practical; 2-denier staple was used.

50 per cent viscose/50 per cent Verel—34s/1 commercially practical; 1½ denier, 2-inch viscose staple was used.

Wool/Verel—see end uses in accompanying box.

Stabilized Verel/nonstabilized Verel—bulk type yarns have been obtained by blending these two types in tow form on both the Pacific Converter and Turbo Stapler, and in staple form on conventional spinning equipment.

Dyeing and Finishing. Verel has been evaluated by the producer as being dyeable in conventional equipment and by use of practical techniques.

While ordinarily not requiring bleaching because of its white natural color, Verel reacts well with regularly used bleaches such as Textone and formic acid.

In finishing, resin treatments need not be considered to obtain wrinkle recovery, crease retention, or dimensional stability except where the Verel is blended with cellulosics.

End Uses. Fabric development at Tennessee Eastman's Kingsport plant and in certain of its customers' mills has resulted in establishment of a preliminary number of end uses as shown in the accompanying box.

Fabric

100 per cent Verel:
- Woven and knitted pile
- Knitted
- Woven

Blends:
- 75 cotton/25 Verel (knitted)
- Wool/Verel[1] (woven)
- Wool/Verel[2] (knitted)
- Cotton/Verel (woven)
- Combed Cotton/Verel (woven)
- Viscose/Verel[3] (woven)

End Uses

- Man-made "furs" (for coatings, trims, and liners)
- Paint rollers
- Wash mitts
- Toys
- Polishing cloths
- Sweaters
- Drapery
- Sport shirts
- Undershirts
- Children's sleepers
- Men's wear (particularly flannels)
- Women's wear
- Socks
- Work clothing
- Batistes
- Flannels

1. Development done using blend of 70 Wool/30 Verel
2. Development done using blend of 50 Wool/50 Verel
3. Development done using blend of 25 Viscose/75 Verel

Causes and Detection of Damage in Raw Cotton

BY A. N. J. HEYN
Professor of Natural and Synthetic Fibers
School of Textiles, Clemson College

EXCLUSIVE

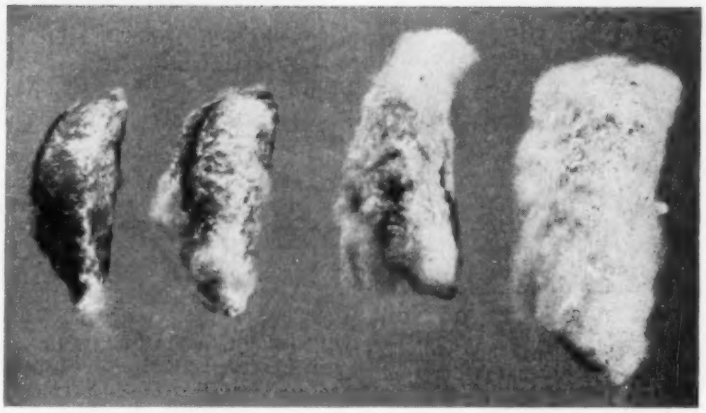


FIG. 1. TIGHTLOCK. As a result of the early development of certain fungi on the fiber, the locks do not fluff out.

THE QUALITY of raw cotton is subject to considerable degradation due to various types of damage which the mature fiber may undergo. This damage is the cause of a lower spinning performance and a lower quality of the product, and may result in considerable financial loss to the mill.

In August of 1954, data were collected by the author of this article from thirty mills in South Carolina concerning occurrence and importance of various types of damage of raw cotton under normal conditions in the mill. Twenty-seven mills reported difficulties in the spinning due to various types of damage; twenty-three reported damage by tar and oil spots; eleven reported damage from "weathering;" nine, damage caused in storage; twelve reported "cavitoma;" five, damage by yellowing of the cotton and the presence of fluorescent spots; and fourteen reported other types of damage, including gin damage and honeydew. From these reports, the practical importance of the damage problem for the mill may be recognized.

The present paper attempts to bring a brief critical evaluation of our present knowledge on various types of damage, their causes, effects, and methods for their detection, with special reference to the latest findings and to some gaps in our knowledge where further research is needed.

Damage to raw cotton may originate at various points during the growing cycle and after. At the moment of the opening of the boll, infection of the mature fiber by certain microorganisms may cause so-called "tightlock," in which the fluffing of the locks is prevented and the fiber weakened.

After opening of the boll, until harvesting, the cotton is exposed to so-called "weathering" damage, in which microbial, temperature, and photochemical processes play a part. During picking and transportation, tar and oil spots and other stain markings may originate. During storage, microbial deterioration of cellulose is one of the main causes of degradation. A certain complex of characteristic changes in fiber properties in this period has been described under the name "cavitoma."

In the ginning process, overheating, overdrying, and overbeating are important factors which cause a weaker or shorter fiber and increased waste.

The different types of damage—microbial, mechanical, chemical, and heat damage—are separately discussed in the following:

Microbial Damage

Damage caused by the activity of microbes, especially molds or fungi, has been extensively studied in mildewing of fabrics, but relatively less in raw cotton.

As many as one hundred million bacteria and five hundred thousand fungi have been counted per gram of raw field cotton (2,3).* Many of these organisms are similar to those inhabiting the soil and decaying plant material. They persist during ginning, storage, and manufacturing of the cotton and rapidly develop under suitable conditions, especially high humidity. Some, but not all of them, are capable of breaking cellulose down ("cellulolytic" ability).

Fungi in Tightlock. The organisms associated with tightlock are not always the same; they are representatives of a few different genera of fungi—*Diplodia, Colletotrichum, Fusarium, Alternaria* (4,5,6)*. Infection takes place immediately after opening of the boll, upon the mature but still unexpanded fiber locks. A wet period at that moment favors development. As a result, the locks may remain partly or fully unexpanded and the fiber is largely weakened and deteriorated (**Figure 1**). The fibers of moderately tight locks may fluff out and be picked and mixed with normal cotton, lowering its grade.

Fungi in Weathering. After opening of the boll, microbial damage may affect the normal locks, especially if the cotton is left for an extended period under damp conditions on the field (**Figure 2**). This microbial damage is an important component in the weather-

*Numbers in parentheses refer to literature references on page 145.

FIG. 2. WEATHERED COTTON from experimental field at Clemson, S. C. Various fungi develop during weathering; the fungi of **Fig. 3** were isolated from this sample.

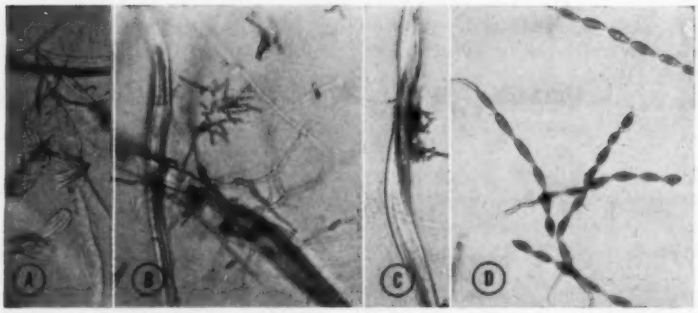


FIG. 3. TYPES OF FUNGI grown from weathered cotton under humid conditions (fiber placed on 2% agar agar in Petri dish): **A**—*Fusarium sp.*; **B**—*Cladosporium sp.* (note two cotton fibers, fungal hyphae, and conidia); **C**—same, on fiber; **D**—*Alternaria sp.* (note string of dark-colored conidia, each consisting of about four cells). The type and structure of the conidia allow identification. (About 150 X.)

ing of field cotton. The fungi commonly found in weathering cotton belong, in large measure, to only a few genera (7,8)—*Alternaria, Cladosporium, Fusarium, Diplodia.* **Figure 3** is a photomicrograph of some of these fungi grown on the fiber on 2% agar agar (see under "Detection of Damage" which begins on page 141). Some of these fungi also play a part in tightlock.

Fungi in Wet Storage. Microbial activity is further considered to be the main or only cause of degradation of cotton in wet storage. This type of damage occurs if the cotton has not been sufficiently dried previously to storage, or if it is stored in the warehouse under humid conditions. A moisture content of nine per cent is generally considered the minimum for growth of microbes in cotton, although some authors report fiber damage progressing even at a moisture content of six to seven per cent.

During storage, a great number of other fungi are active in addition to the above ones found in weathering (for instance, representatives of the genera *Aspergillus, Penicillium, Chaetomium, and Stachybotrys*). These fungi are the same as those which cause the deterioration of cellulose fabrics, "mildewing." **Figure 4** shows the hyphae* of these fungi on the degrading fiber. Extensive lists of cellulose decomposing organisms have been published (8,9,10), most of which have been compiled in the book by Siu (11).

The Role of Bacteria. Certain bacteria (*Cytophaga* group) and *Actinomycetes* are known to be specialized cellulose-decomposing organisms, but no actual data exist on their role in the deterioration of raw cotton, although their participation has been assumed by many authors.

Figure 5 shows bacteria on and in the fiber.

Mechanism of Deterioration. **Figure 4** shows progressive stages of deterioration by fungi. The fibers are mounted in 18% alkali. (B) and (C) show fungal hyphae on the surface and (D) in the lumen of the fiber; in (E) the fiber shows irregular diameter, due to localized swelling; the the higher swollen portion the cuticle is loosened (arrow); (F) and (G) are the final stages, which do not show the characteristic swelling.

According to the author's interpretation, increased swelling would be associated with the initial stage of the deterioration and would disappear in the final stage. This can be explained by the partial breakdown of the amorphous cellulose in the beginning followed by a complete breakdown in the final stages (43). Also, rupture of the cuticle plays an important part in the swelling process, either as a cause or a result (see **Figure 4 E**).

Increased swelling in alkali has been described as a special feature of "cavitomic cotton" (see below). In line with the above interpretation, cavitomic cotton can be considered as cotton in the initial stage of deterioration ("cavitomic stage"). The observations on swelling of cavitomic and seriously mildewed cotton in carbon dioxide (**Figure 8**) confirm this viewpoint.

The localized nature of the initial attack is seen from **Figure 4E** and **5B** and has been also stressed by earlier authors (19a).

The biochemical mechanism of cellulose decomposition is not yet fully understood. The decomposition takes place under the influence of enzymes. Various cellulolytic preparations have been recently obtained (23,24,25), and different enzymes probably play a part. One of the enzymes has been found to cause increased swelling of the fibers in alkali (initial stage, above); another enzyme would greatly reduce strength.

Effect on Strength. The most important result of the activity of the above fungi is presumably the decomposition of cellulose and an accompanying decrease of fiber strength. The main technique for recognizing this effect consists in determining the reduction in strength of sterile strips of cotton fabric after incubation with pure cultures of the fungus in question

*Threadlike parts.

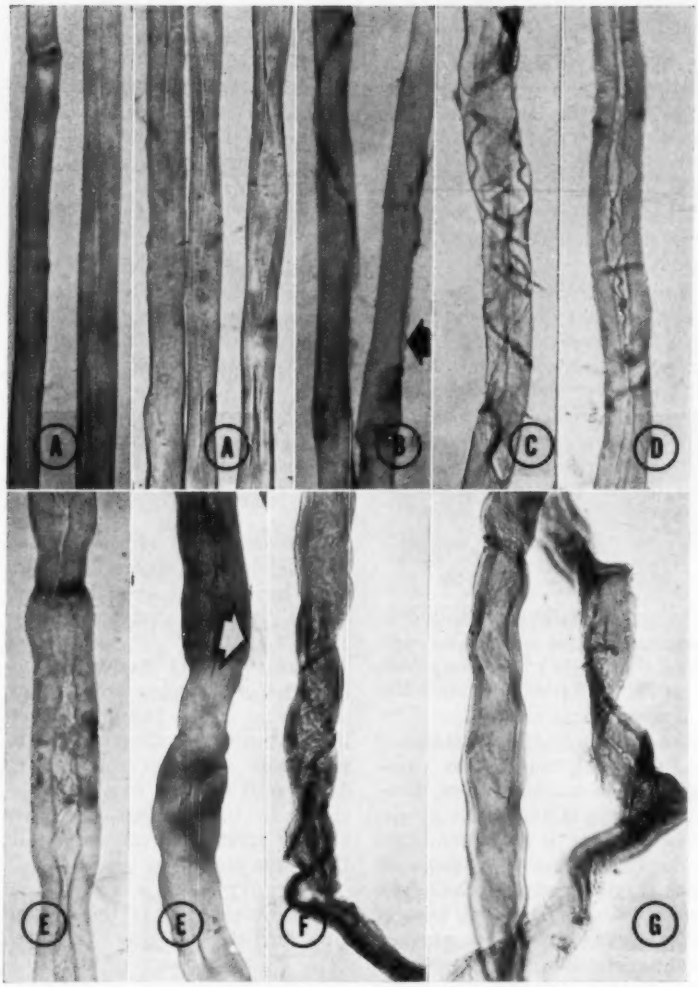


FIG. 4. STAGES OF DETERIORATION under the influence of fungi. All fibers are mounted in 18% sodium hydroxide. **A**—normal fiber; **B** and **C**—fungal hyphae growing on the outside of the fiber; **D**—fungal hyphae growing in the lumen of the fiber; **E**—fibers showing excessive and irregular swelling ("cavitomic" stage), at left cavitomic fiber, at right mildewed fiber. In upper part of fiber at right side, cuticle is damaged and loosened (arrow). **F** and **G**—final stages of deterioration. Note fungal hyphae in spiral around fiber **(F).** (About 200 X.)

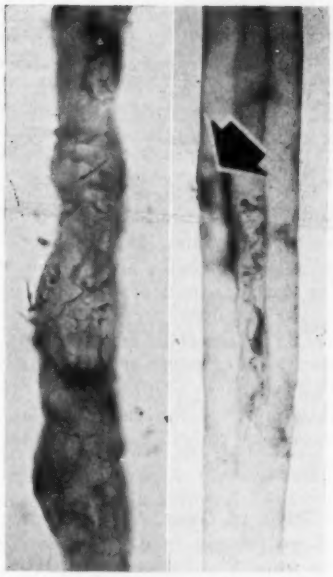


FIG. 5. BACTERIA ON CAVITOMIC FIBER: left, on the outside of the locally swollen fiber; right, in the lumen of the fiber, probably after penetrating at damaged spot indicated by arrow. (345 X.)

(11,12,13,14). With this technique, the main fungi associated with tightlock, weathering, and wet storage have indeed been found to be able to decompose cellulose.

In the case of tightlock and advanced mildewing, serious deterioration of the fiber and complete loss of strength are beyond doubt and can be recognized even without measuring the strength.

In most other types of microbial deterioration, in weathered and cavitomic cotton, a decrease of strength is less manifest, and as a matter of fact has not been easily recognized. The reason for this probably lies in the localized nature of the attack and the methods of testing. The Pressley tester, at the small gauge length which is customarily used for fiber strength determination, tends to mask the weak spots in the fibers. A significant decrease in Pressley strength has not been found until very recently in field weathered cotton (1) nor in cotton samples incubated under pure culture conditions with the main fungi commonly found on such cotton (15), nor in cotton deteriorated during storage (cavitomic cotton) (18). Also, determinations with the Stelometer at ⅛" gauge length have not shown significant differences; only a tendency for decreased elongation at break has been noticed. Only recently (19), a definite decrease of strength has been found in cavitomic cotton by using a 5 mm gauge length instead of the customary "zero" gauge length.

Effect on Fiber Length Distribution. A decrease in fiber length is always found in cotton damaged by microbes (1, 15, 18). This decrease can be ascribed to breakage of the mold-weakened fibers during ginning and in the preparation of the sample for the Pressley test. That such breakage actually occurs follows also from direct observation.

A comparison of length distribution, e.g., in cavitomic cotton as compared to normal cotton of the same origin, showed that the percentage of short fibers was much higher in the first cotton. It is this larger percentage of short fibers which probably causes the lower spinning performance of weath-

ered and wet stored cotton. A loss of from 10-15% of the cotton in the form of exceptionally short fibers ("fly") may result. This is one of the most serious effects of microbial damage.

Effect on DP. So-called "hidden" damage has been described in weathered cotton (1). Part of the cellulose molecules are broken in this case, as indicated by an increased fluidity (decreased viscosity) of the dissolved cellulose (lower degree of polymerization, DP). This damage exhibits itself by weakening of the fabric in later bleaching, finishing, and laundering.

Effect on Color. A serious effect of weathering is discoloration of the fiber. The darkening of weathered cotton has long since been the subject of accurate measurements (20), since it seriously influences the grade. It has recently been directly ascribed to the presence of dark pigmented fungi on the fiber (21), and processes have been worked out for bleaching such cotton.

"Cavitoma." Another effect of microbial activity is a complex of mainly secondary, characteristic changes in the properties of wet-stored cotton described under the name "cavitoma" (17, 18). These effects include a shorter staple, an increased pH, a decrease of reducing substances, and an increased swelling of the fiber in 18% caustic (see **Figure 4E**).

These changes have been attributed to microbial activity, since the presence of certain fungi is associated with them but the responsible organisms have not yet been determined. Cavitoma was originally considered to be characteristic for a certain type of damage during storage, distinguishing this from other types of microbial damage, as in weathering and mildewing. Recently, similar effects have been reported, however, to be also associated with the growth of the fungi commonly found in weathering (15, 22).

Spots. During storage under humid conditions, spots of different color may result from the presence of large concentrations of mycelia and/or spores and conidia of colored fungi. Such color spots do not occur in dry-stored cotton, but may be abundant under conditions of excessive humidity.

Other spots may result from oil, grease, marking ink, etc. Fluorescent spots will be discussed under "Detection of Damage."

Effect on Processing Performance. The behavior of cavitomic cotton in processing has been extensively studied (19). This cotton produces more processing waste; less even slivers, rovings, and yarns; 45% more breakage in spinning; and weaker yarns as compared with similar undamaged cottons.

Mechanical Damage

Mechanical damage is caused in almost all stages of ginning and manufacturing; damage may also be caused in harvesting, especially in mechanical picking.

Two different types of mechanical damage have been distinguished: a coarse type of damage consisting in a breaking, bruising, or crushing of the entire fiber; and a finer type of damage in which only the cellulose chains are broken (26, 29). The first type of damage is detected by microscopic examination; the second type, by measurement of the fluidity of the dissolved cellulose. Both types of damage generally occur together, in ginning—the second type may also result from microbial activity, "hidden" damage in weathering (1), chemical activity, and photo-oxidation; and may occur separately in these cases.

Effect on Length Distribution. During normal ginning, a reduction of the original fiber length of the seed cotton always takes place. This decrease exhibits itself by a change in length distribution, an increase in the number of shorter fibers, and by a greater length variation (19). This breaking down process is influenced by moisture, temperature, and some faulty conditions of the ginning process.

Effect on DP. A decrease of 18% in the degree of polymerization of cellulose has been found to result from the ginning process, and a total decrease of 30% from all mechanical operations together. The greatest decrease occurs during picking (23, 24). These findings indicate a considerable breakage of the molecular chains during the mechanical operation.

Seed Coat Fragments. A type of mechanical damage which may be caused by faulty ginning is the formation of an extraordinarily high amount of seed coat fragments. The immature fibers often attached to these impurities may give rise to certain types of neps. The seed coat fragments will cause black spots in the cloth (30).

Problems. The effects of mechanical damage, especially in ginning, have so far been little analyzed. Further study would be of great value.

Results recently obtained in laboratories of the paper industry are suggestive. It was found that beating of purified cotton fibers suspended in water in a laboratory Jokro mill resulted in a large decrease in DP but that the effect on the crystalline portion of the fiber was moderate.

When dry cotton was ground into a powder, most of the crystalline portion was also destroyed (31). The importance of such findings for the analysis of gin damage is clear.

Chemical Damage

Chemical damage is caused principally during dyeing and finishing, and only to a smaller degree at an earlier time with the raw fiber.

Photochemical Degradation of Cellulose. Photochemical degradation of cellulose occurs during weathering (1). Accelerated photochemical degradation by carbon arc light of cotton cloth and yarn has been found to result in a loss of breaking strength and increased cuprammonium fluidity.

Tar Spots. The formation of different types of spots originating from outside chemical substances may be classified under chemical

damage. The most common spots of this type are tar and oil spots.

Tar and oil spots have caused a great deal of damage and difficulty in various mills. If the patches of spotted cotton are not fully removed from the bale, the finished fabric will show a great number of small black spots, resulting from the spreading of the tar during manufacturing. High temperature promotes this process of spreading.

The National Cotton Council investigated the sources of origin of tar spots and found that they may have various causes such as tar-prepared picking bags, contaminated railroad cars, asphalt from roads, bale bands, etc. (32). Oil spots often originate from the bale press. An educational program by the Council has already resulted in considerable reduction of the evil, and the present experiments on improved wrappings will certainly further contribute to the solution of this problem.

Another approach to the problem has been followed by the Institute of Textile Technology and has consisted in the finding of methods for easy removal of the spots in finished cloth (33).

Fluorescent Spots. The presence of certain substances on the fiber may cause spots which are fluorescent in ultraviolet light. They will be discussed under "Detection of Damage."

Honeydew. A chemical defect of lesser importance is "honeydew." This damage is caused by the presence on the lint of sugar, secreted by certain insects called aphids *(Aphys Gossypii Glover)*. Special dark-pigmented fungi *(Cladosporium)* generally develop in this gummy product. The resulting stickiness of the cotton causes difficulties in processing.

Heat Damage

The degrading of cotton by heat is important in finishing and laundering of fabrics, and in tire cords, and has been extensively studied in these materials. It has been generally recognized that degradation is not appreciable below 100 C, but that it increases rapidly at higher temperatures.

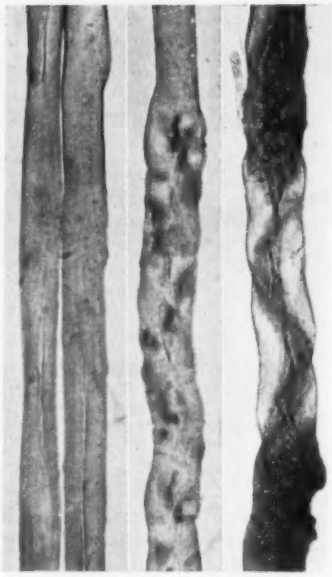


FIG. 6. CONGO RED TEST: left, undamaged fibers; center, slight mechanical damage (note stained damaged spots); right, seriously mildewed fiber (upper and lower portion stained). (250 X.)

The first study on the influence of heat on the raw cotton fiber has been made at the Southern Regional Research Laboratory (34). A simultaneous reduction in strength and elongation of the single fiber has been found at temperatures from 110 C to 162 C. The conclusion has been made that the heat effect consists in the creating or intensifying of weak spots along the fiber. An increase of the number of transverse cracks along the fiber has been directly demonstrated under the microscope.

A decrease in the degree of polymerization of the cellulose was also found. The percentage of cellulose chains broken is at the beginning linearly proportional to the time of exposure. Moisture accelerates heat degradation (this has only been demonstrated so far with yarns).

In the drying process prior to ginning, so-called "overdrying" may cause considerable heat damage of the raw fiber. This type of heat damage has been recently studied (35, 36, 37). It has only minor effect on the fiber properties as studied with the existing methods for fiber quality testing and for detection of damage. The only changes in fiber properties are a higher alkali absorption (alkali centrifuge test, see under "Detection of Damage"), and a shift in fiber length distribution towards shorter fibers (35). This shift is intensified in processing.

The latter effect greatly influences the processing performance: The spinning end breakage is 21.4% higher with overdried cotton and the yarn strength and evenness are considerably decreased as compared to normal cotton.

A cooperative full-scale study of the effect of excessive gin-drying on processing has been recently carried out by a group of mills, under auspices of the National Cotton Council and the Institute of Textile Technology (36, 37). In the study, the economical importance of this effect became clear. Processing costs between "no heat" and "high heat" ginned cotton were found to amount to about $10 per bale of cotton processed.

Detection of Damage

Early recognition of damaged fiber and the identification of the type of damage are of great importance in cotton buying and quality testing.

The effect of damage on the customary quality properties of the fiber and on spinning performance (as compared to the properties of the normal fiber) can be indicative for damage. A change of quality properties may be associated, however, with almost any type of damage and does not give specific indication for the nature of the damage.

For identifying the type and origin of the damage, tests should be used which are based on other features. A brief review follows of the best known tests existing at present.

Microscopic and Microchemical Tests. A review of microscopic tests for practical application has been given elsewhere (38); a brief description is given here.

The oldest microscopic tests (Nos. 1, 2, and 3 below) for damage are based on the demonstration of rupture of the cuticle and primary wall. Such rupture is often associated with the activity of

microorganisms, but can also result from a variety of other causes, such as mechanical, chemical, and heat damage.

1. Congo Red Test. The most nearly universal microscopic test is the Congo Red test (39, 40). The principle is as follows: Congo Red has great affinity for cellulose, which composes the secondary wall, but cannot pass the outer primary wall and wax cuticle, for which it has no affinity. The dye can pass the primary wall and stain the underlying cellulose only if the cuticle is ruptured. This is the case in damaged fibers.

The test is carried out by swelling the fiber in caustic soda and after quick washing, placing it in a concentrated solution of Congo Red. The fiber is investigated in 18% sodium hydroxide.

By using different concentrations of alkali for the initial swelling, it is possible to differentiate between various types of damage. If a concentration not higher than 11% is used, the wall is swollen without exerting pressure on the cuticle, and only places which are fully ruptured (as in mechanical damage) will show up. At a higher alkali concentration, a slight pressure is exerted on the cuticle, which will result in completing the rupture of places which were only slightly weakened (as in mechanical and heat damage).

In the case of extremely slight damage only very high alkali concentrations will rupture the weakened places. By counting the number of stained fibers and expressing it as a percentage of the total number, a quantitative figure for damage can be obtained. **Figure 6** shows mechanical and fungal damage.

2. Balloon Test (41, 42). An older test for the rupture of the primary wall is the "balloon test," which has been designed for detecting microbial damage. In this test, the fibers are swollen in equal parts of carbon disulfide and 15% caustic soda. Normal fibers swell and after about half an hour form so-called balloons or beads. The absence of balloons indicates damage (generally) from microbial activity (see **Figure 7**). A condition for balloons to be formed is an intact primary wall, which constricts the swollen fiber at regular intervals between the balloons.

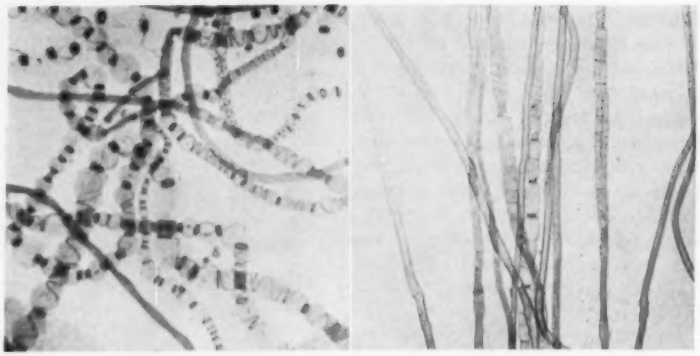


FIG. 7. SWELLING TEST in carbon disulfide and sodium hydroxide; left, undamaged fiber (note regular balloons); right, cavitomic cotton. Swelling is more evenly distributed along the cavitomic fibers, and no typical balloons are formed. (About 50 X.)

The author found that with cavitomic cotton an extremely high, often irregular swelling results in this reagent (**Figure 8**). Seriously mildewed fibers do not exhibit such high swelling (**Figure 8E**). This is in agreement with the theory presented in the first part of this article, that the first stages of deterioration are accompanied by an increased capacity for swelling.

Instead of the above reagent, other strong swelling agents can be used, e.g., cuprammonium (38) or the more stable cuprien (5-10 times diluted copper ethylene diamine solution) and "Triton B" (43, 44, 45).

3. Extrusion Test (46). In this test short sections of the fiber are swollen for one minute in 18% alkali. If the primary wall is intact, it will restrict the swelling of the secondary wall so that the material is extruded at the ends of the sections which become dumb-bell shaped. If the primary wall is damaged, the sections will swell over their entire length without extrusions being formed.

4. Swelling in 18% Caustic Soda. Swelling in 18% caustic soda has been used as a special test for cavitoma (17, 18). The fibers are mounted in the solution and after 15 minutes their diameter is compared with the diameter of normal control fibers. Normal fibers may, for instance swell from 17 to 27 microns, damaged fibers up to 37 microns (see **Figure 8**).

It has been found also that after inoculation with fungi active in weathering, a higher swelling results (15) and that certain enzyme preparations (23, 24, 25) from cellulolytic fungi cause increased swelling, so that this test may be of general nature.

5. Methylene Blue Test. This is a microchemical test for hydrocellulose, which is formed in various types of chemical damage, e.g., acid tendering (38). This test is used principally in the investigation of fabrics and yarns, but may also prove useful in the investigation of raw cotton.

Chemical Tests. *1. Extract pH (18).* This is one of the most promising tests for detecting microbial growth. The test was originally introduced for the detection of cavitoma. It is carried out by kneading one gram of the fiber with a glass rod for 30 seconds in 15 cc distilled water and determining the pH of the liquid. (This can be done in a simple way by adding 0.25 cc of "Gramercy" universal indicator to 5 cc of the liquid in a test tube and estimating the pH in comparison with the color chart supplied with the indicator.) The normal pH of undamaged cotton ranges from 6.3 to 7.3; in the case of microbial growth it may be as high as 10.0. For cavitomic cotton, values from 8.2 to 9.5 have been reported. The pH change would be a response to growth of fungi on noncellulosic constituents of the fiber.

An interesting relationship has

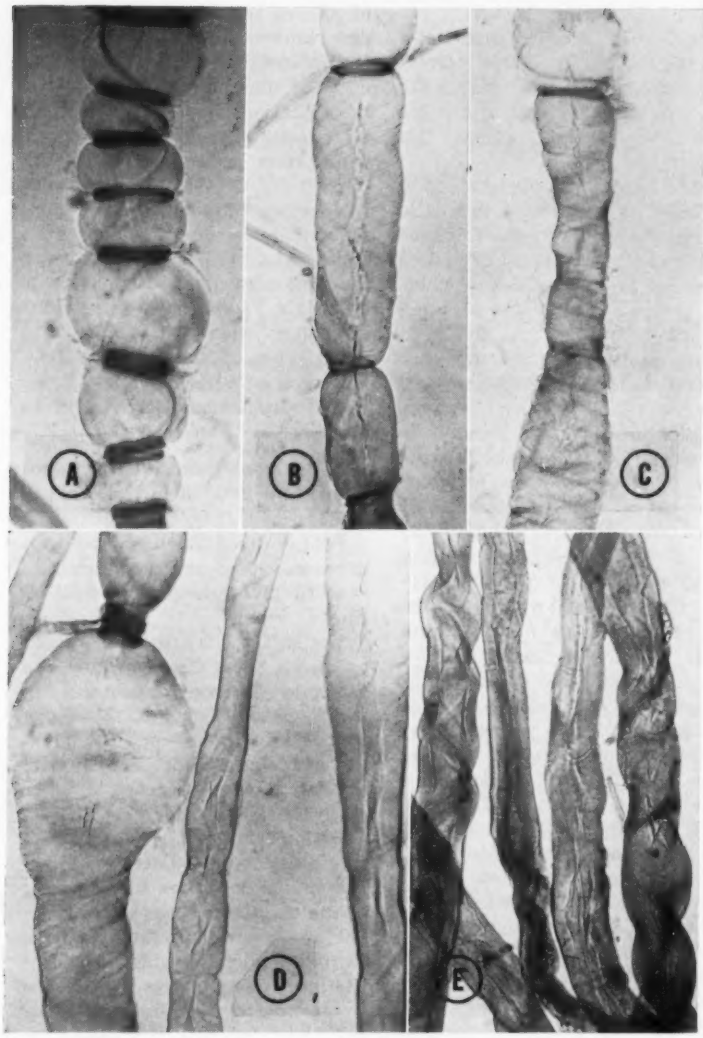


FIG. 8. SWELLING TEST in carbon disulfide and sodium hydroxide; **A**—undamaged fibers (note regular balloons separated by strings of primary wall); **B** and **C**—cavitomic cotton (note absence of regular balloons, strings of primary wall at large, irregular distance); **D**—different degrees of swelling in cavitomic cotton; **E**—fibers severely damaged by fungi (note absence of typical swelling, and presence of fungal hyphae). (About 230 X.)

recently been reported (47) to exist between the extract pH and the grade of raw cotton. The average pH and the percentage of high pH samples (above 8.0) were found to increase steadily from better to poorer grades. This can be explained by increased development of fungi on the poorer, darker grades of cotton.

2. Kendall Copper Index for Reducing Substances (ESRM) (16, 18). Another chemical test, originally used for identifying cavitomic cotton, is a test for reducing substances. One gram of cotton is kneaded with a glass rod in 3 ml of hot, distilled water; 2½ ml of extract is recovered by centrifuging. One ml of the extract is brought to a boil after adding a "Clinitest" tablet (as used for urinalysis of sugar).

After 15 seconds, the solution is diluted to 15 ml and the color compared with that of standard dextrose solutions. (The five standard solutions contain from zero to 1.5 mg/ml dextrose. E S R M value 1 corresponds to 0.1 mg dextrose per ml, etc.) In normal cotton, the values lie between 8 and 10; in cavitomic cotton in advanced stages, between 0 and 3.

Although fungi can definitely cause a decrease in reducing substance content of cotton fiber, a low reducing substance content does not necessarily imply microbial action, since leaching by heavy rainfall and other conditions may complicate the situation. In rain leached cotton, the pH values lie between 6 and 3. This test appears, therefore, less promising than the pH test.

3. Centrifuge Alkali Absorption (48). This test has originated from the swelling test, No. 4 above. In this test, the percentage increase in weight of a cotton sample is determined after placing it for 10 minutes in 18% NaOH, and centrifuging the liquid off under standard conditions. Cotton damaged by microorganisms, hydrochloric acid, and heat had a much higher weight increase (e.g., 50% higher) than undamaged cotton. Wider experience with this new test is needed to prove its practical value.

4. Tests for Honeydew. The presence of honeydew on the fiber can be demonstrated with the customary sugar reactions, e.g., Fehling's (Benedict's) copper solution (49). This reaction can be intensified by subsequent spraying of the cotton with phosphomolybdic acid (use glass atomizer!).

This reagent acts with Fehling's solution to give a colorless solution so that uncontaminated areas appear colorless. The cuprous oxide of the sugar-contaminated areas reacts to give an intense blue color (50). The alpha-naphthol test on sugar can also be used (49a).

5. Tests for Degradation of the Cellulose Molecule. Various tests exist for the detection of chemical changes in the cellulose molecule, such as a change in chain length (DP) and the formation of oxy- and hydrocellulose. These standard tests have long since been customary in cellulose chemistry and have been reviewed in various texts, e.g., (51). They are only briefly mentioned here.

The chain length can be measured from the viscosity of cellulose dissolved in cuprammonium hydroxide or in cupriethylene di-

amine solution.

An increased copper number (the copper reduced from the cupric to the cuprous state by the aldehyde groups) is also associated with degradation of cellulose molecules.

Also, an increase of carboxyl groups may accompany degradation and is indicated by an increased absorption of basic dyes such as Methylene Blue.

A test for oxycellulose is Turnbull's Blue test. It is based on the formation of an insoluble ferrous salt under the influence of the larger number of carboxyl groups. Also, Methylene Blue absorption is used for indicating carboxyl groups. This reagent also indicates, however, the presence of mineral salts dried into the cellulose. The Methylene Blue test can be used for quantitative purposes (see also under "Microscopic Method").

Hydrocellulose is formed under the action of acids and results in shorter molecules of higher reducing power. Oxycellulose is formed under the action of oxidizing agents or light. Oxidation in acid condition results in an increase of aldehyde groups; oxidation in alkaline condition results in an increase of acid groups. Chain shortage only occurs if oxidation takes place in alkaline condition (as in laundering).

Physical Tests. *1. Light Reflectance.* Discoloration of cotton occurs principally during weathering, and has been associated with the presence of dark colored mycelia of fungi (21). The determination of light reflectance is customary in normal cotton grading (20), and will therefore, not be discussed here. It suffices to state that such measurements can be made with any spectrophotometer (e.g., at wave lengths of 5,000 to 7,000 angstrom units).

2. Fluorescence in Ultraviolet Light. The use of ultraviolet light for detecting microbial damage has been known for many years and has been suggested long ago for detecting mildew in cotton. One author wrote in 1943 (52): "In very many cases it is possible to detect the presence of mildew by examining the goods under ultraviolet light, which produces an intensive yellow fluorescence."

The investigation in ultraviolet light has lately gained new interest (56) and has even been "rediscovered." A tendency exists now for using it as a rapid universal test for damage.

Wave lengths of 3660 and 2537 angstrom units are used in textile research. The long wave ultraviolet radiation is sometimes called "black light." Inexpensive portable lamps are available at present.

Various types of fluorescence have been described in cotton: dull ivory, a yellow, a bright green, and a blue type. A variety of causes can underlie this fluorescence. One type of bright green fluorescence has been definitely associated with growth on the fiber of the fungus, *Aspergillus Flavus (51)*. This type of microbial fluorescence was first described for cottons from Arizona, Texas, and California.

A less easily recognized white fluorescence has been associated with growth of the fungus *Alternaria* (53). The growth of most other fungi in deteriorating cotton is not associated with fluorescence. It is therefore certainly not possible to use fluorescence in general tests for microbial damage.

Intense yellow fluorescence (50) and a reddish fluorescence of low intensity (49a) have been associated with the presence of honeydew. This fluorescence has been suggested as a rapid test for this defect.

A change from bluish-white to ivory white fluorescence has been associated with age and with heat damage (55). This particular fluorescence has been ascribed to the presence of oxycellulose formed by exposure to light and heat. It has been suggested as a rapid test for these types of damage and received much interest as a possible indication of heat damage (for which no rapid test exists).

It should further not be overlooked that many contaminants of cotton, such as machine oil and grease, also cause fluorescence. This is a well known fact (54, 55, 56) which is often used for checking the presence of oil in fabrics.

3. Colored Spots. The presence of colored spots may indicate mildew. Microscopic examination can readily confirm this by the presence of dark colored hyphae or fructifications (conidia) on such cotton. Other colored spots may result from grease and tar. Solubility tests with suitable solvents like carbon tetrachloride and subsequent microscopic examination differentiate the latter spots from the first ones.

Certain yellow spots have been associated with pink boll worm. Some types of yellow spots show fluorescence in ultraviolet light. A full explanation of these spots has not yet been given.

4. Test for Fiber Stiffness. In an interesting new fiber test recently described (54), the stiffness of the cotton fiber is determined from the amount of force required to bend a given weight of parallel fibers.

The stiffness is greatly increased by heating the fiber, so that the test may become of use for detecting heat damage. The test probably indicates some change in the microcrystalline structure of the cellulose.

Biological Tests. The most positive evidence for microbial damage is the isolation and growing of the microorganisms from the fiber on certain substrates, and the testing of their cellulolytic ability. The microscopic recognition of hyphae on the fiber is in itself not sufficient for this purpose, since many fungi grow on other components of the cotton fiber than cellulose without causing great damage to the cellulose.

For purposes of identification, it is often sufficient to place small tufts of the fiber on sterile 2% agar agar in glass dishes, under which condition the fungi rapidly grow out to form fructifications. (These are generally not clearly visible on the fiber and are necessary for identification.) If the species is known, it can generally be told whether it has cellulolytic ability, by using the lists mentioned in the foregoing section (11). **Figure 3** gives photomicrographs of fungi grown in this way.

The cellulolytic ability can also be directly tested by transferring the fungus to a substrate containing cellulose as the only carbon source (a suitable substrate is sterile filter paper wetted in an aqueous solution of 0.05% am-

monium nitrate, 0.05% potassium dihydrogen orthophosphate in tap water; some crystals of magnesium ammonium phosphate are scattered on the filter paper.

The Czapek solution is another more complicated one and contains 0.3% sodium nitrate, 0.1% potassium monohydrogen orthophosphate, 0.5% magnesium sulfate, 0.05% potassium chloride, and 0.001% ferrous sulfate.

Fig. 9 is a photograph of colonies of cellulolytic fungi grown in this way on filter paper.

Standard techniques for testing fungi use cotton duck instead of filter paper (12, 14); the loss in strength of the fabric in a certain period of time is used as a measure for the cellulolytic activity of the fungus. Another test for microbial growth is based on the manometric measurement of the respiration of the fungus (11).

From the above, it is clear that only a few fully specific tests for damage exist; these are all tests on microbial damage. For the detection of heat damage and various types of mechanical and chemical damage, no rapid, specific test yet exists. It would be of great importance if rapid tests for identifying these types of damage could be worked out. Various efforts for finding such tests are being made at present.

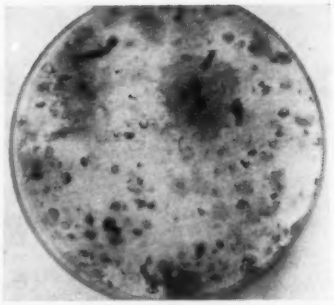


FIG. 9. CELLULOSE-DECOMPOSING FUNGI grown on filter paper (in Petri dish); paper wet in a solution of mineral salts.

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Safety Training Course for Supervisors Is Paying Off at The Graniteville Company

The safety record of The Graniteville Co., a textile manufacturing concern which has grown in 110 years from one plant to six grey goods mills and two finishing plants, for the past ten years has shown that improvement in safety will come as a result of intelligent work and planning, just as surely as it comes in any other field.

In 1943 Graniteville's accident frequency was 37.1. The frequency for 1944 dropped to 13.5, and for 1945 it was 5.1. Since then the frequency range has been from 3.7 (high) for 1947 to 1.47 (low) for 1951. The record for 1954 was 2.81.

Credit for much of this improvement is given to the safety training in accident prevention course for supervision which was initiated in 1944 and has been given to all new supervisors and safety committeemen appointed since then.

To benefit from the increased knowledge of accident prevention and Graniteville's own experience, the course was completely revised in 1953. Here is a general description of the course which resulted.

BY WILLIAM A. HAWN
Safety Director
The Graniteville Co.

ABSTRACT*

IF AN accident prevention program is to be successful, the work force as well as the supervision, must want to work safely. How can we get them to work safely? We think by the following ways:

(a) By attaching more importance to safety. Make it equal in importance with quality and cost; make safety a coordinate part of production.

(b) By giving the supervisor and the employee a working knowledge of the cause of accidents.

(c) By giving the supervisor an insight into some of the more common reasons that people have accidents.

With these as our goals, we developed in 1953 the "safety training in accident prevention" course briefly described below.

Benefits of Training. We have benefited by our safety training in the following ways:

1. Accidents have been materially reduced.
2. We know that a majority of accidents are caused by mental or emotional disturbances.
3. We have learned that the correction of attitudes helps to prevent accidents.
4. Supervisors are now assuming more responsibility for accident prevention.
5. Supervisors have developed a better insight and understanding of operative behavior.
6. Supervisors are better able to spot accidents "in the making."
7. Supervisors are giving more time to safety instructions.

The Course. We decided to spotlight two things during the course of instruction: (1) accidental occurrence and (2) the operative. An understanding of these two areas does much to help prevent accidents.

Five sessions were planned as follows:

Session 1

In the first session we set the scene by explaining the purpose of the training, by explaining something of the nature of the sessions. The group is put at ease through establishing an air of mutual exchange of experience. The objective of the sessions is put on the board and discussed. The objective: to develop a higher skill in accident prevention through a study of safety as applied to my job. Everything that is done or said is tied to this objective either directly or indirectly.

Focus on the Accident. We establish the factors in an accident through the domino illustration given by Heinrich in *Industrial Accident Prevention.* The first and most important concept of accident prevention is this: accidents do *not* just happen, they are caused. Until this fact is established and accepted, any further safety training is on insecure ground.

The next important principle we want to establish is how to handle an accident. We do this by citing an accident that will be understood by the trainees with a minimum of explanation. This gives the trainee a pattern to go by when he is working on his own.

Investigating Accidents. Using the accident that was cited as a background, the group works out a four-step method to use in investigating accidents. Each man is given a card listing these four steps:

1. Get the facts.
2. Question all details.
3. Check to avoid recurrence.
4. Follow through.

This four-step method is used in the succeeding sessions to review accidents that students have handled in the department. This also helps to develop a skill in investigating accidents.

Session 2

Basic Accident Causes. Session Two is a further look at the *accident.* Not only is it necessary to be familiar with and be able to analyze an accident, but it is necessary that the basic causes of accidents be understood. We develop this session around the basic accident causes, both personal faults and mechanical and material faults. These are the 14 items as developed by Heinrich. They are developed with cases and points so as to give them strong associations.

By now the trainee has been effectively reminded that accidents

*From a paper presented by Mr. Hawn during the 43rd National Safety Congress.

don't just happen, they are *caused;* he is able to associate specific faults contributing to the accident; he has a technique for investigating the accident; and has a growing enthusiasm for accident prevention.

During succeeding sessions the main consideration is to add to the trainee's insight and know-how. His main concerns are: things that he can do, and learning basic reasons why people behave as they do. He is in a position of leadership and it is up to him to assume leadership. This can best be done by learning to read or interpret the behavior of the people he supervises in order to "nip as many accidents in bud" as he can—in short, to practice accident prevention.

Session 3

The Supervisor. Session Three turns the spotlight on the supervisor. He talks and thinks about things that he can do to prevent accidents. We are indebted to Glenn Gardiner, editor of *Management Information,* for some of the material used in this session. In preventing accidents, the supervisor takes the following steps:

1. Sets a good safety example.
2. Instructs each worker thoroughly in the safety precautions of this job.
3. Keeps all safety devices in proper use.
4. Follows up safety instructions constantly.

It is surprising how willingly the supervisor accepts these four steps as a necessary part of his responsibility, even though he may not have accepted them at the beginning of the session.

Session 4

Emotional Immaturity. Session Four centers around emotional maturity and accident proneness. During the first three sessions we have established the premise that there are mental and emotional causes connected with most accidents. If this is true, what are some of the causes? One group of characteristics we call emotional immaturity. From this point we put some characteristics of the immature child and the immature adult on the board and link up the carryover. Some of the characteristics are present in every person to some degree. It is the excessive person that needs to be counselled and guided away from trouble.

In the case of accident proneness we also define this person within certain limits, and look at some of the reasons why he continues to have accidents. The distinction is made between a person that is accident-prone and one that is an accident repeater.

Session 5

Mental Health. The subject of Session Five is: "Influence of Mental Health on Accidents." This session starts with a group definition of mental health. It is necessary to spend enough time with this definition to make sure that all group members have the meaning well in mind. We are very careful to make this point: It is not our purpose or intention to enter into a discussion of insanity. That is outside our field of knowledge, and it would have to be dealt with by professionally trained people.

A great deal of our material for this session was gleaned from an article appearing in *National Safety News,* February 1953, by Dr. Gerald Gordon, psychiatrist for the Du Pont Company, with the theme we use: "Employees allowed to shirk responsibility become mentally sick."

We develop some of the characteristics of mental illness and study statistics showing that people who get in trouble off the job are likely to be the same people who get into trouble on the job. The second portion of the session is used to develop some suggestions that will promote good mental health.

There is no final examination at the conclusion of the sessions; however, the last 15 or 20 minutes of the fifth session are used to summarize the impressions of the group. During the last few minutes the instructor is able to tell how well he has sold accident prevention to the group.

Problems of Woven Carpet Mills Cited

BY HERBERT L. SHUTTLEWORTH, II
President
Mohasco Industries, Inc.

EXTRACT*

BY FAR the most important problem of the woven segment of the carpet industry concerns its erratic sales performance, and its inability to increase sales in proportion to the growth in population, to the increase in income, or in proportion to other commonly accepted measures of normal growth.

The record output of 102,000,000 square yards last year represents only 2.1 square yards per household, about the same per household figure as in the early twenties. Fifty years ago production represented about 5 square yards per household.

It is quite evident that carpet has been regarded as a luxury—as a postponeable purchase—and that we have clearly lost out to TV, automobiles, and other vigorous competitors for the consumers' dollar.

What is being done about it?

Four developments within the past year represent the industry's first aggressive and constructive merchandising programs in decades:

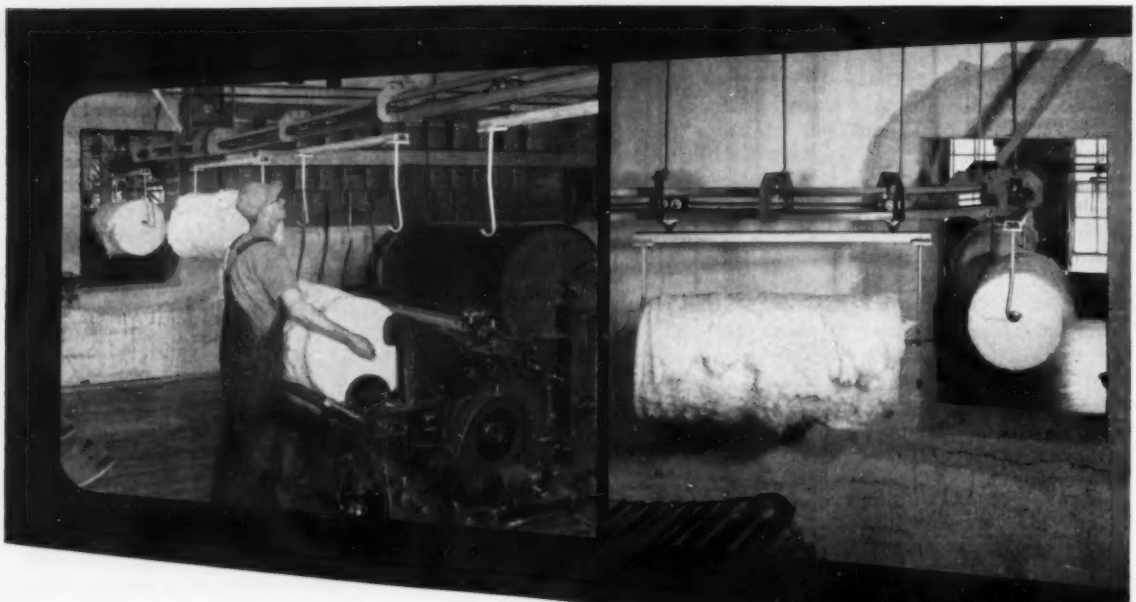
(1) The industry-wide promotion program carried on through the Carpet Institute;

(2) Installment selling;

(3) Development and promotion of in-the-home selling programs;

(4) Industry working closely with the F.H.A. in developing standards for carpet, the payment for which may be included under an F.H.A. mortgage—when approval has been obtained, another significant opportunity for increased sales of carpet will have opened. *(Continued page 149)*

*From remarks of Mr. Shuttleworth before the New York Society of Security Analysts on February 28, 1956.



Out of the way and through the wall

LAPS MOVE CONTINUOUSLY

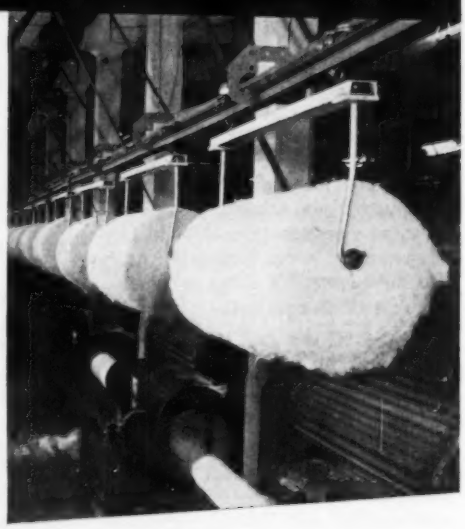
from pickers to cards

Landahl Chainless Conveyors keep out of the way and go right through the wall in this mill's most congested areas. Laps are free from damage in transit.

The open type construction of the Landahl Chainless Conveyor is another cost cutting feature. It makes cleaning easy—eliminates excessive accumulation of lint.

Remember that Landahl Conveyors have no chain to wear, no cable to sag, no sprockets needed. Landahl offers short radius turns, low cost maintenance, low initial cost, ball and socket universal joints, and caterpillar drive. Write today for Bulletin LS-1.

Photos: Courtesy Valdese Mills, Inc., Valdese, North Carolina.



LANDAHL **Chainless** CONVEYORS

The LANDAHL CONVEYOR CO.
13106 Athens Ave., CLEVELAND 7, OHIO
A SUBSIDIARY OF THE AMERICAN MONORAIL COMPANY

It is my belief that these developments reflect the awakening of the industry to its hitherto realized, but undeveloped, sales opportunities.

The sales outlook for domestic producers, however, includes one potentially serious threat—imports. Machine-made imported carpets, primarily from Belgium and England, but also from France, Italy, and Japan, have been increasing. For the first eleven months of 1955, imports were 38 per cent above the same period last year, and represented 6.7 per cent of domestic production. Producers with a heavy wilton volume will be particularly affected, since wilton imports represented 13.1 per cent of domestic production.

Although our industry is taking a strong position against further tariff reductions on machine-made carpet, we recognize that the possibility exists that further reductions in the rate, which is now 25 per cent, may be made. To what extent further reductions will encourage more imports, we cannot predict; but there is no doubt that it will encourage them.

Pricing. A second industry problem is pricing. We certainly have our share of practices that I consider undesirable and unnecessary.

For example, cash discounts of almost 5 per cent are given for payment within 10 days—4 per cent for payment within 60 days. In addition, volume rebates are given to retail outlets, going up to 5 per cent of annual purchases. Dumping and large-scale "deals," some of which were motivated by the necessity to alleviate tight cash positions, have taken place. And finally, carpet for commercial installations is today being sold at prices which yield little or no profit.

It is my belief that the Mohawk-Smith merger will help in stabilizing the industry, but I have no permissible solution for the type of questionable industry practices I've mentioned.

Raw material supplies and costs. The third problem that has bothered this industry in recent years is the fluctuating supply and price of wool.

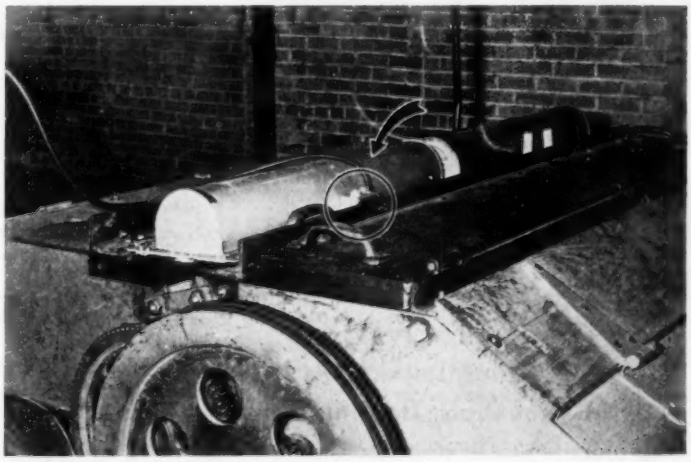
Substantial progress in freeing the industry from dwindling wool supplies and an unstable wool market has been made through the development of man-made fibers suitable for carpet.

Outlook for the Industry. From my comments on the progress that is being made by the industry in solving two of what I consider its three major problems, you must know that I am optimistic concerning the outlook for our industry. It has just recorded its best year, in terms of physical output. Production of rugs and carpets, excluding all mats and scatter rugs, amounted to 102,000,000 square yards. This record production has been achieved without any general increase in finished goods inventories, and the outlook for the future is to us encouraging.

In the immediate future—that is, for 1956—we see no sign of any reduction in the demand for soft floor coverings.

Our longer run outlook is, I believe, also good. Every year our population is increasing by about 2½ million people. Population growth will increase the need for home furnishings.

Spiked Apron Magnet Halts Tramp Iron Hazards at Chatham



PROTECTING subsequent processing machinery from damage by tramp iron is the purpose of this permanent, non-electric magnetic separator (arrow) which is installed on a feeder at Chatham Mfg. Co. In the circle is the Ferrometer device which measures a predetermined amount of tramp iron and then flashes a warning light until the operator removes the metal from the magnet's face plate.

TO PROTECT machinery in the Elkin, N. C., plant from tramp iron damage, Chatham Manufacturing Company recently installed an Eriez spiked apron magnet above their Proctor & Schwartz feeder.

This permanent, non-electric magnetic separator, is removing bale ties, nails, wire, and miscellaneous iron from the raw stock before it reaches the blending machines handling raw wool, rayon, nylon, etc. The amounts removed vary with different runs; but, in the words of S. S. Flynt, Chatham's purchasing agent, "the precise amount removed is of little significance, since even a very small amount could be highly destructive.

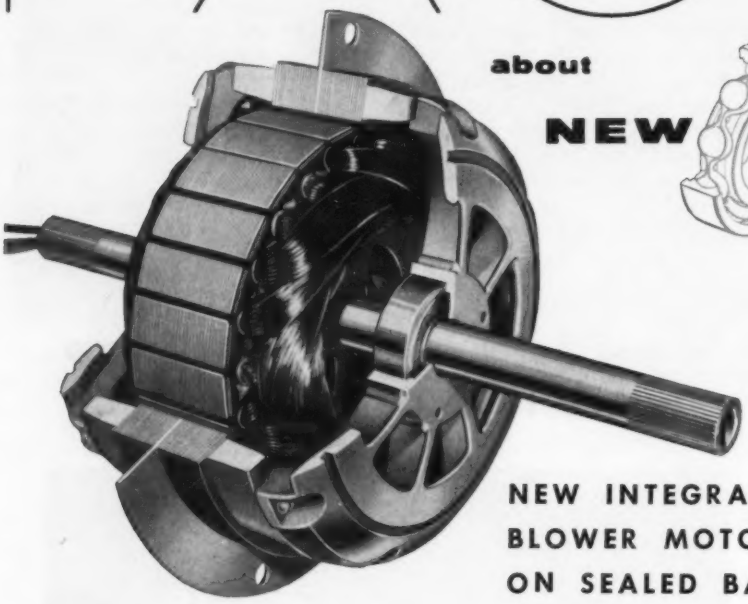
"The Eriez unit has paid for itself many times," continued Mr. Flynt, "by reducing damage to

FACTS

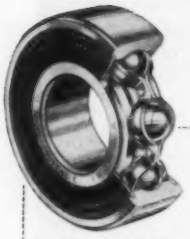
about

NEW DEPARTURE

BALL BEARINGS



NEW INTEGRAL-DRIVE BLOWER MOTOR DEPENDS ON SEALED BALL BEARINGS!



5 advantages of New Departure's Sentri-Seal ball bearings in electric motor applications

- **SEALED AND LUBRICATED FOR LIFE!** No need for relubrication; no danger of over- or under-lubrication.
- **SIMPLIFY DESIGN!** Eliminate need for separate seals and grease fittings.
- **CARRY LOADS IN ANY POSITION!** Moving parts are held in positive alignment, regardless of motor mounting position.
- **WEAR IS NEGLIGIBLE!** Require no attention for adjustment for wear. Have a reputation for outlasting the products they serve.
- **QUIET-RUNNING!** New Departure ball bearings are precision-made, run smoothly. Their uniformity is a guarantee of dependability.

Nowhere is the superiority of New Departure sealed ball bearings in electric motor applications better exemplified than in this new integral-drive blower motor.

Revolutionary "inside-out" design of this new motor imposed a lubrication problem solved by the permanent-lubrication characteristic of the finest sealed ball bearings. In this motor, the rotating element, to which the blower wheel is attached, is on the outside and revolves around a stationary shaft through which the lead wires pass. "Sealed and lubricated-for-life" New Departure ball bearings were selected because they assure permanent lubrication, regardless of centrifugal force. Also, because motor and blower wheel share the same permanently lubricated bearings, this integral unit is free of the need for periodic servicing.

Equally important, New Departure sealed ball bearings handle combination loads in any position . . . assure positive alignment of rotor and stator. This means a versatility of application for this motor that offers new freedom to designers.

Sealed ball bearings also help increase motor efficiency and reduce electrical hum. Since in ball bearings wear is so slight as to be entirely negligible, designers were able to build in a smaller precision air gap, which is maintained throughout motor life.

Let New Departure's unexcelled engineering service show you the many advantages of sealed ball bearings in electric motor and other applications.

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.

card clothing and subsequent machinery, with its inherent loss in production efficiency." Mr. Flynt also credits the magnetic separator with minimizing fire and explosion hazards normally associated with the presence of tramp iron.

The magnet at the Chatham plant is also equipped with a Ferrometer device which measures a predetermined amount of tramp iron and then flashes a warning light until the operator removes the tramp iron from the magnet's face plate. As a result, the magnetic protection is quickly and easily maintained at peak efficiency, and there is never any question in the operator's mind when, or whether, the unit requires maintenance.

Troubles in King Cotton's Realm

Part II*

BY RINGGOLD ARDEN

EXCLUSIVE

FOR A great many years, the United States completely dominated the cotton markets all over the world. The American staple was the criterion by which practically all other cottons were judged.

The invention of the cotton gin in 1793 made the production of cotton on a large scale thoroughly practicable, and in the southern part of the United States were millions of virgin acres to be had for the asking, and ideally suited to the growing of cotton. The importation of African slaves furnished the labor, and the growth of the cotton textile industry in England and Europe furnished the market.

By the time the Napoleonic Wars were ended, and England and Europe were ready to return to the arts of peace, King Cotton was firmly seated upon his throne as the head of what appeared to be an impregnable empire. For generations no thought was given to even a remote possibility that anything could ever happen to disturb this monarch's dominion.

As fast as the improvident farming methods of the times wore out land, the planters moved west to lush "new ground." As the land became impoverished, the lint yield consistently fell until we were finally planting around 44 million acres of land to get about 15 million bales of cotton. Land was plentiful, labor was cheap, and commercial fertilizer was expensive. The American cotton farmer no longer had a complete stranglehold on the production of cotton, and other countries with land suitable for its production were gradually pushing up their acreage to threaten the domination of the world market by American cotton.

At the beginning of what we might call the "New Deal Era," the federal government undertook to solve the farmers' problems by means of subsidies and controls. The farmer was finally guaranteed a price for his cotton which was based on the relationship between industrial living standards and those on the farm in the years before the United States was very considerably industrialized, and life on the farm was very highly regarded as the equal or the superior of life in industrial sections.

Guaranteeing a profitable price on anything will stimulate its production. If the government guarantees a profitable price on cotton, or anything else, then the government must take steps to prevent over-production, because the only way a price on anything can be guaranteed is to offer to buy it at that price, and regardless of what politicians may think, there is a limit to how much surplus farm produce the taxpayers of the United States are willing to buy and store, or give away.

Arbitrary limitation of the means of production will always stimulate the invention of methods for getting better results from the available means. If the government arbitrarily limited the number of spindles which could be operated in the United States, the spinners, if guaranteed a profitable price, would immediately seek ways of producing more yarn per spindle. The farmers feel exactly the same way about getting more cotton per acre when the acreage is limited, and instead of turning out about 15 million bales of cotton from 44 million acres of land, we can now produce about the same amount from 17 or 18 million acres.

Since a 15-million-bale crop leaves a big exportable surplus which is increasingly harder to sell in the world markets, the federal government is now proposing further acreage reductions, and one of the popular schemes for effecting this is what has been termed a "soil bank program." The American taxpayer is to put up the money for paying the farmer for taking his land out of cotton production, and it is a reasonable assumption that the farmer will take a substantial part of his soil bank payments and invest them in fertilizer and farm machinery to get more cotton off of the acres which he is permitted to plant.

This may be a good thing in the long run, if we ignore the fact that the methods of doing it are the methods of totalitarian government. The immediate effect, however, will be to keep producing more cotton than can be sold abroad at the price at which the government pegs it. This price, as has previously been mentioned, makes millionaires out of large, efficient operators at the expense of the American taxpayer.

The more completely the small cotton farmer is driven out of business, the more extensively cotton planting, harvesting, and ginning will be mechanized, and it is this mechanization which is at the root of His Majesty's troubles

*Part I appeared in the April, 1956, issue, pages 165 and 167.

News about

B. F. Goodrich Chemical *raw materials*

Hycar latex sizes... upgrade cotton fabrics, improve hand, washfastness and wear life

SIZES made from Hycar latex (dispersions of Hycar nitrile rubber in water) are as much as 300% more effective than starch sizes in improving wear resistance in cotton fabrics. (Tests made under Federal Specifications CCC-T-191-B, with Stoll Universal Wear Tester.) At the same time Hycar gives a soft, yet full, hand and increases resistance to stain and fading.

Blends of Hycar with urea or melamine formaldehyde (used for increased crease resistance) bring back and even exceed the fabric tear and abrasion strength lost by the addition of urea or melamine formaldehyde alone.

Wool, as well as cotton, comes in the picture with Hycar latex used as an after-treatment to reduce crock, particularly with red naphthol dyes. With cotton and rayon Hycar is used as a binder for pigment coloring and printing.

In cotton it is used as a carrier for such agents as fungicides and flame-proofing chemicals and as a binder for waxes and metallic salts used for water repellency or stain resistance.

What can Hycar latices do for you? For complete information please write Dept. ET-3, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

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in this country.

We are right now in a period where a great deal of cotton is still harvested by hand, although not actually picked in the old-fashioned sense. The entire boll is pulled off of the plant by hand and later treated in a gin in the same manner as the mechanically harvested cotton. It is not only likely, but highly probable, that within the next few years even this pretense at hand picking will disappear, and all cotton will be gathered either with mechanical pickers or with stripping machines.

Gin machinery manufacturers expect the situation to get a great deal worse rather than better. They feel that they have just about reached the practical limits for working cotton at the gins, and some feel that the practical limits have been exceeded and that some cleaning machinery used at gins is highly injurious and must ultimately be abandoned.

From the spinner's standpoint the gin should do the best cleaning job that it can before the cotton is ginned. Any trash which the gin can remove without injury to the stock or to the quality of ginning will benefit the spinner; but after the cotton has been ginned, it can be cleaned in cotton mills advantageously and under controlled conditions.

If the ginners are going to use after-cleaners, these should certainly be machines of a character found satisfactory in textile mills, and any cleaning machines of a type generally disapproved by textile mills should not be used in gins. Today, the majority of the gins equipped with after-cleaners are using machines which no textile mill would consent to employ; and if these machines are uniformly found injurious to cotton when used in spinning mills, it is absolutely certain that they are injurious to it when used anywhere.

These after-cleaners, which are patterned after the old re-gin that was on the market about 40 years ago and then disappeared, will remove a great deal of trash from cotton after ginning, but will pulverize much of the remaining trash so finely that it is practically impossible to get it out of the cotton.

This provides spinners with a problem totally new. Not only is the leaf trash ground up into fine pepper, but the motes are fractured into small bits so that tiny seed fragment particles appear in the yarn. This is something that was almost completely unknown 20 years ago.

The tendency of the re-gin to fracture trash is aggravated by the use of dryers in gins. The dryer is a necessity where machine-picked cotton must be ginned, and it also makes possible the gathering of wet cotton in weather which would have made cotton picking impossible in the old days.

Many years ago when cotton was picked by hand and labor was quite plentiful, cotton was allowed to become thoroughly dry after a rain before picking it. Now, with labor shortages, and mechanical harvesting, it is not always possible to let the cotton dry before gathering, and very wet cotton can be taken to a gin and dried out quickly to prepare it for ginning.

An amount of heat which will dry matured cotton enough to gin it, will dry the motes so completely that they are very brittle, and easily smashed up in the cleaning and ginning processes. The leaf trash also is overdried and becomes brittle. Breaking up motes makes neps and seed fragments, and breaking up leaf makes pepper trash. Spinners complain particularly about the increase in these two types of waste.

An urgent need is the development of a type of dryer which can preserve the proper moisture content in the matured cotton for good ginning, and at the same time not overdry the lighter stuff which becomes bone dry in high temperatures.

Spinners from many parts of the world are complaining about the increasing trashiness of American cotton. If these spinners find that they can get cleaner and more satisfactory cotton from Africa, South America, or Asia, the demand for American cotton will of course go down to about the needs for domestic consumption, and that will cut the acreage by several million acres and throw many more thousands of small cotton planters out of business.

Some persons think this is a good thing, which perhaps it may be. If the American cotton growers and ginners reach the point where they only have to produce for the domestic mills, and those mills have to take what they can get, they can not make fabrics as satisfactory as foreign mills can make out of better cotton, and that will not be a good thing.

The fewer cotton planters we have, the fewer persons there will be to protest lowering of tariffs on cotton goods; and if American mills can not compete in quality with foreign mills, as they certainly can not compete in price, the plight of the textile industry will be still worse. We are worried enough at present about foreign competition without having these anxieties made more acute.

A great many well-informed persons contend that the cotton farmer today is primarily interested in producing cotton for the government loan rather than for the spinning mills. Certainly, the fact that the farmer can put his cotton in the loan makes him less responsive to pressures from the spinning industry.

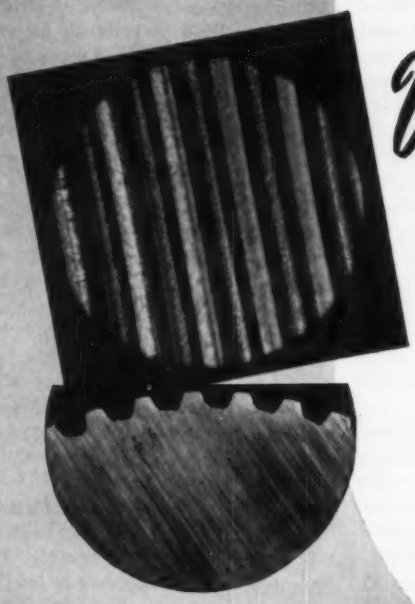
Logically, the farmer should be interested in producing cotton which is best adapted for spinning. There seems to be little incentive today for the farmer to do this. He is not growing cotton for spinning —he is growing it to put in the loan.

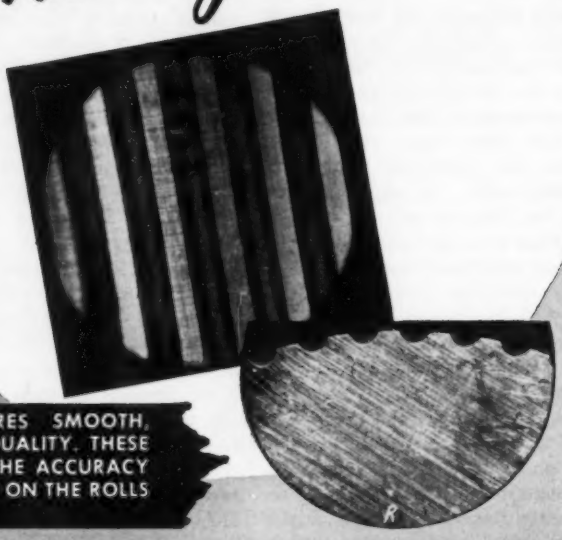
In determining the loan value, we are using a method of cotton grading which should now be obsolete. The old grades were based on visible trash in the sample. We need a new grading method which will be based on trash, whether readily visible or inconspicuous. It is a perfectly ridiculous situation when a spinner pays a premium for Strict Middling cotton and finds that he can make better, cleaner yarn out of Middling or Strict Low Middling cotton.

This is a spinner's problem now, but more and more it is getting to be a fundamental problem of the entire American cotton industry; and every bale of hand picked, properly ginned cotton which is added to the world's supply in some other country, makes our problem more acute.

NUMBER 4 OF A SERIES:

Which is the best Money Value?





ACCURATE DRAFTING CONTROL ASSURES SMOOTH, UNIFORM YARN AND RESULTANT HIGH QUALITY. THESE FACTORS ARE DIRECTLY DEPENDENT ON THE ACCURACY OF THE ROLL ASSEMBLY AND SPECIFICALLY ON THE ROLLS THEMSELVES.

Pictured above are unretouched, magnified views of 2 bottom rolls. ON THE RIGHT IS "YOUR BEST MONEY VALUE" — THE SACO-LOWELL STEEL BOTTOM ROLL WITH ROLLED FLUTES.* This exclusive roll fluting gives a far more uniform contour, plus a smoother surface that keeps flutes clean and free of microscopic rough spots that act as fibre traps. In addition, these Saco-Lowell Rolls are manufactured from the same dies used in making the original rolls, have the exact fluting arrangement and therefore run "true" in every respect. Saco-Lowell steel bottom rolls with "rolled flutes" are manufactured from special stock, produced by master craftsmen, induction hardened by an exclusive Saco-Lowell process, specially honed to give an extra satin-smooth finish, and ruthlessly inspected to assure perfection.

Poorly formed, irregular flutes, as shown in the illustration at the left, interfere with fibre flow and are the source of yarn irregularities often easily detected but hard to trace. Hardening, not properly controlled, creates variations in the depth of "case", thus causing uneven wear and loss of fibre grip. Failure to match exactly the original roll specifications makes it impossible to obtain uniform results throughout the spinning room.

There can be no question — "It Pays to Use Genuine Saco-Lowell Repair Parts." Our engineers will be glad to discuss steel rolls with you and make specific recommendations. Write to the nearest Saco-Lowell Sales Office.

*Patent Pending.

See Saco-Lowell Bulletin — July 1953

"There is hardly anything in the world that someone cannot make a little worse and sell a little cheaper — and the people who consider price alone are this man's lawful prey."

John Ruskin

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HOW OTHER MEN MANAGE

• Letters to Editor • Technical Discussion •
• Manufacturing Briefs • Kinks & Short Cuts • Comments from Readers •

Write to the Editors!

Readers are invited to make use of this section for further discussion of published articles, or for discussion of problems arising in the plant. Names will not be used without permission. Payment is made for practical articles or for letters containing manufacturing information.

Address: Editor "Textile Industries," 806 Peachtree St., N. E., Atlanta 8, Ga.

How to Calculate Weavers' Piece Work Rates

EDITOR TEXTILE INDUSTRIES:

There have been several discussions among members of the management of this mill in regard to the best way to determine piece rates for weavers.

Perhaps you or some of your readers could send us a formula for establishing rates on a 1000-pick basis.

The following data pertain to our weave room:

Number of looms	288
Speed of looms, ppm	155
Number of weavers per shift	6
Average hourly wage	$1.33
Per cent efficiency	90
Examples of constructions	
40", 36 x 36, 3.25 sheeting	
40", 68 x 40, 2.20 drill	

CONTRIBUTOR NO. 8846

Referred to sources of information.—Eds.

EDITOR TEXTILE INDUSTRIES:

To determine pick rates for weavers, it is necessary to have the following information on each style:

1. 100% weaver's loom stand.
2. Base rate per hour or 40 hours.
3. Per cent efficiency at which base rate is figured.
4. Picks per minute of the loom.

In the case given by CONTRIBUTOR NO. 8846, it is assumed that a weaver's stand is 48 looms, the base rate at 90% efficiency is $1.33 per hour, and the loom speed is 155 picks per minute. On this basis a weaver would earn $53.20 for a 40-hour week.

The following formula would be used to determine rate per million picks (I suggest million rather than thousand to prevent having to use so many decimals in the rate):

$$\text{Rate/million picks} = \frac{\text{weaver's earnings/40 hours}}{\text{ppm} \times \text{hours} \times \text{minutes/hour} \times \text{looms/weaver} \times 90\%}$$

$$\frac{\$53.20}{155 \times 40 \times 60 \times 48 \times 90} = \$3.31 \text{ per million picks or } \$.00331 \text{ per 1000 picks}$$

It is possible that what CONTRIBUTOR NO. 8846 is trying to determine is how to figure his weavers' job loads rather than his pick rates; and, of course, if this is the case, he will need to have some time and motion studies made. However, if what he is interested in is a formula for figuring pick rates, we believe that the above information will answer his questions.

CONTRIBUTOR NO. 8848

(Continued on page 157)

NEW KINK CONTEST!

$100 will be awarded the winner

Send your entry now! This contest ends August 15, 1956

Every kink, short-cut, timesaver, or quality improvement suggestion entered in the contest will be paid for immediately upon acceptance. The $100 award will be made as soon as all entries are judged.

The contest rules are simple:

► All contributions must be postmarked not later than midnight, August 15, 1956.

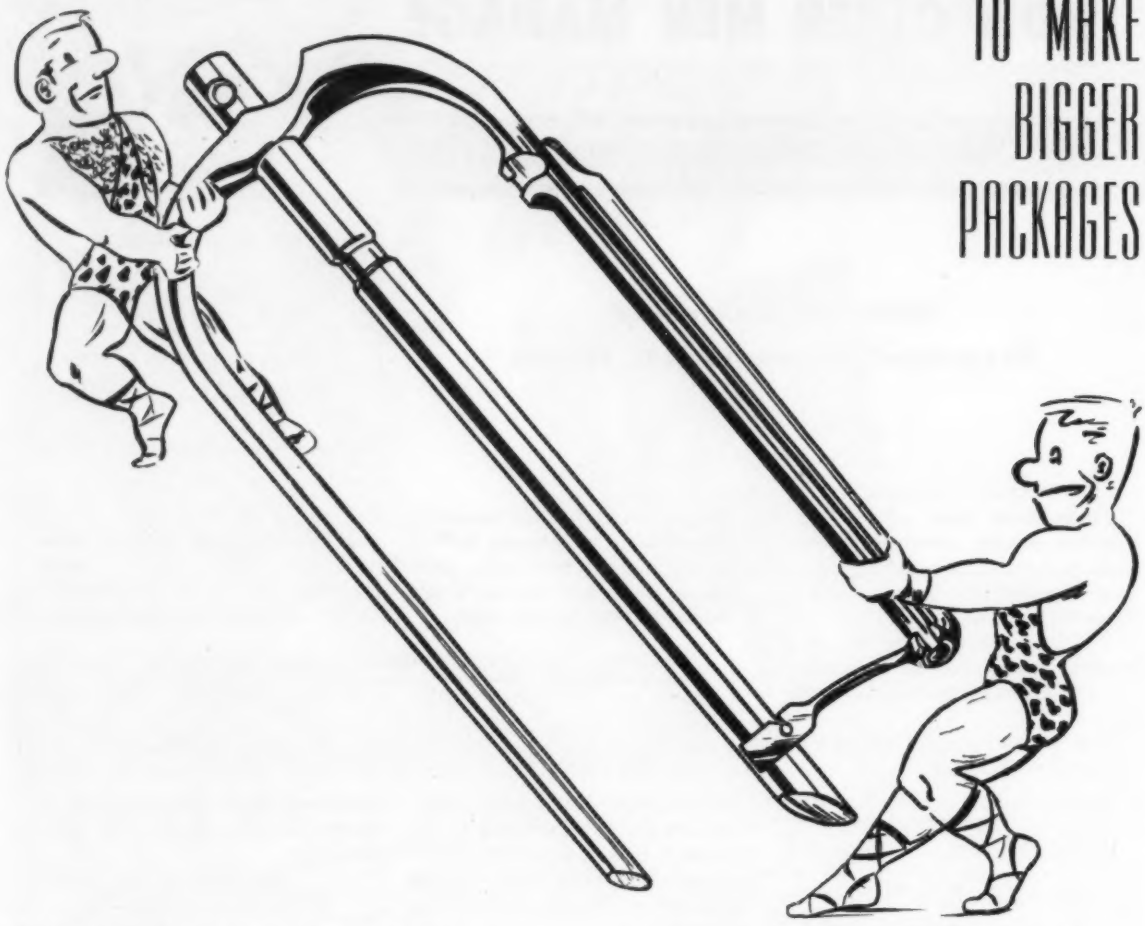
► No limit to the number of entries an individual may submit in any one contest.

► All entries paid for upon acceptance — no waiting. Extra payment for photographs that are usable. Extra consideration is also given kinks accompanied by legible pencil sketches or drawings.

► Entries must not have been published previously and must not be submitted to any other publication.

Send your contest entry to: Editor TEXTILE INDUSTRIES, 806 Peachtree St., N. E., Atlanta 8, Ga.

WE S-T-R-E-T-C-H YOUR FLYERS TO MAKE BIGGER PACKAGES



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*Patented **Trade Name

Ideal Machine Shops, Inc.

Bessemer City, N. C.

30th Year of Continuous Service to Textile Mills

(Continued from page 155)

EDITOR TEXTILE INDUSTRIES:

The problem confronting CONTRIBUTOR No. 8846, of determining a piece rate for weavers, is rather simply solved when the conditions as he sets them out are known. The following is a simple formula for setting a piece rate for the job as laid out in the CONTRIBUTOR'S mill:

$$\frac{\text{Average wage per hour}}{\text{No. looms assigned} \times \text{M picks/hr @ 90\%}} = \text{Piece rate/1000 picks}$$

$$\frac{\$1.33}{48 \times 8.37} = \$0.00331 \text{ per 1000 picks}$$

To assign weavers to the proper number of looms is an entirely different and more complex matter. In the piece rate calculation shown in the accompanying table, it is not known whether the weavers are partially or fully assigned, or have more looms assigned than they can run.

In setting piece rates or designing incentive wage payment plans, the first and most important thing to do is to establish proper loom assignments for each style being run. The table shows a typical calculation for loom assignment.

CONTRIBUTOR No. 8850

EDITOR TEXTILE INDUSTRIES:

In establishing the pay rate per 1000 picks in a small weaving mill, two sets of figures must be on hand: (1) an accurate record of the production per loom of the style in question (in thousands of picks) for as long a period as is necessary to be considered representative, and (2) a standard figure representing the hourly or weekly wage of the average weaver.

The system to be suggested here is simple and is geared for use by small mills; in units equipped with time study departments, more time can be devoted to establishing the standard production per loom for each style as woven by each individual weaver, and thereupon figuring some basis for an incentive or bonus plan when the weaver makes more than the standard picks.

The starting point, or "picks" (actually thousands of picks) per hour which should be produced, can be established in only one accurate way: by examination of production records for a period long enough for a particular style to be considered representative and to allow weavers to become skilled in weaving the style if it is new. This period will vary with the nature of the styles. The examples of constructions cited by the contributor should be run for no less than a month before attempting to establish the rate. Care must be taken during this time to assure that weavers perform at the best quality and production levels that they can. It is no secret that when a person knows he is being studied to establish a rate, it is always possible that he will under-produce in order to get a better rate; also, high production is useless if quality is substandard. In choosing a weaver or weavers to use for gathering the production statistics,

it is best to eliminate learners and "weak sister" weavers, also the very good weaver, and try to stick with the average good weaver. In any rate system thus established, the poor weavers generally suffer and the excellent one should profit.

If this method can be used, average hourly rates for the individual weaver (or for the weave room in general if there is not that much difference between levels of skill among weavers) are paid for the style while average production is being established. If time or other conditions force establishing a rate for a new style without the benefit of adequate production record study, the production can be precalculated as follows:

140 ppm × 60 = 8400 picks per hour per loom

(Continued on page 159)

Calculation of Loom Assignments*

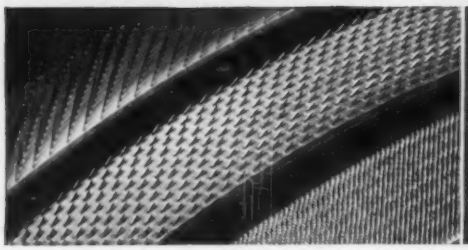
	Normal Minutes to Perform Element		Occurrences per 1000 Picks		Normal Minutes per 1000 Picks
Warp stops (back of drop wire)	1.08	×	0.012	=	0.01296
Warp stops (front of drop wire)	0.72	×	.062	=	.04464
Filling stops	.24	×	.049	=	.01176
Mechanical stops	.26	×	.008	=	.00208
Mat-up	1.23	×	.006	=	.00738
Mark up smash or warp out	.92	×	.005	=	.00460
Flag loom for fixer	.25	×	.005	=	.00125
Walk to stopped loom	.15	×	.147	=	.02205
Patrol backs (1/30 min)	.09	×	.239	=	.02151
Patrol fronts (1/60 min)	.05	×	.119	=	.00595
Miscellaneous—Loose or extra ends out, measure and flag for doff, clean filling fork grate, inspect cloth	.09	×	.119	=	0.01071
Total					0.14489
Plus weaver's rest and personal attention time, 10%					.01449
Standard minutes per 1000 picks					0.15938

Number of Looms to Assign a Weaver:

$$\text{Average weaver: } \frac{60}{0.15938 \times 8.37} = 45 \text{ looms}$$

$$\text{Top-flight weaver: } \frac{60 \times 1.20}{0.15938 \times 8.37} = 54 \text{ looms}$$

*Based on the following loom data: 155 ppm, 90% loom efficiency, 9.30 M picks/hr @ 100%, and 8.37 M picks/hr @ 90%.



Ashworth Tips ON CARDING

No. 29 in a Series

FLATS AND FLEXIBLE BENDS

The lickerin assembly and the flats with all assemblies directly related to the flats, are the most effective cleaning elements on your cards. The lickerin assembly has been discussed, so we give you the following for consideration in connection with the flats and related mechanisms:

1. Flexible bends control the setting of flats to cylinder. Probably 90% of the cards operating today have worn flexible bends. To double check your own, we suggest you try the following:
   a. Set the flats at each setting point.
   b. Crank flats so that space for setting will be equi-distant between setting points. Recheck setting. You will be surprised at the variation in setting at this point and at the exact setting point.

2. Worn flat ends contribute to poor flat setting, particularly when flexible bends are also worn. We have found that this variation in setting multiplies when bearing surfaces of flat ends are worn more than 3/16" in width. Remilling of flat ends is indicated for quality work, and particularly if flexible bends have already been reground. The reworking of flats and flexible bends go hand in hand.

3. Flat chains convey the flats in their carding operation and should always be kept under correct tension. Some mills make the mistake of running their chains with excessive tension, resulting in undue wear on the flat driving mechanism and the cocking of flats on flexible bend between the backstand and the second stand from the back. This area does the heaviest carding, so it is important that the flats seat firmly on the flexible bend if you are to get quality work.

Worn chains permit flats to rub on front and back plates, damaging the flat clothing, and are responsible for an excessive amount of flat top waste due to the increase between center distances of flats.

4. Flat driving sprockets and shafts must be in good repair at all times. Worn sprocket shafts cause excessive strain on the driving mechanism, and in some cases it is impossible to keep the flats parallel across the face of the cylinder. The teeth in the flat driving sprocket should be carefully lined up. Should one sprocket be installed on the shaft so that a tooth on one side of the card is slightly ahead of the same tooth on the opposite side of the card, the flats will not run parallel, and in most cases will hang up, resulting in broken flats, damaged flat clothing and damaged cylinder clothing.

5. Flat carrier pulleys should turn freely to facilitate flat operation. Oil regularly and clean regularly.

6. The spiral flat cleaning brush should be set accurately end to end giving consideration to length of flat clothing and length of bristles.

Setting bristles too deep will pack waste at foundation of flat wire instead of brushing it out.

7. Be sure large and small rotary brushes turn freely and have good bristles. Also, inspect and keep in adjustment the flat end brushes.

While the quality of your carding starts at the back of your card, you cannot control it or improve upon it unless your flat assemblies are in proper working order.

Incidentally, we specialize in flat end milling and regrinding flexible bends at our Greenville, Atlanta, Charlotte, and Fall River, Mass., shops.

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American Card Clothing Co. (Woolen Division)

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Ashworth PIONEERS IN CARD CLOTHING

3 FACTORIES • • • 6 REPAIR SHOPS • • • 7 DISTRIBUTING POINTS

(Continued from page 157)

Such estimates must always be tempered by knowledge of what problems might come up in long range production that is out of the sample stage, and must also consider the possibility of loom speed increase. In such precalculated production, it is generally better to figure higher for potential production, since rates can always be increased, but can be decreased only with difficulty.

Once production is established, some way must next be found to apportion direct labor costs to the individual loom. Again taking an average, in this case $1.33 per hour per average good weaver:

$1.33 ÷ 48 looms per weaver = $.0277 per loom per hour

If a loom must carry its weight in terms of $.0277 per hour, then the style in question, considering the good average production per loom to be, say, 8000 picks per hour, is rated:

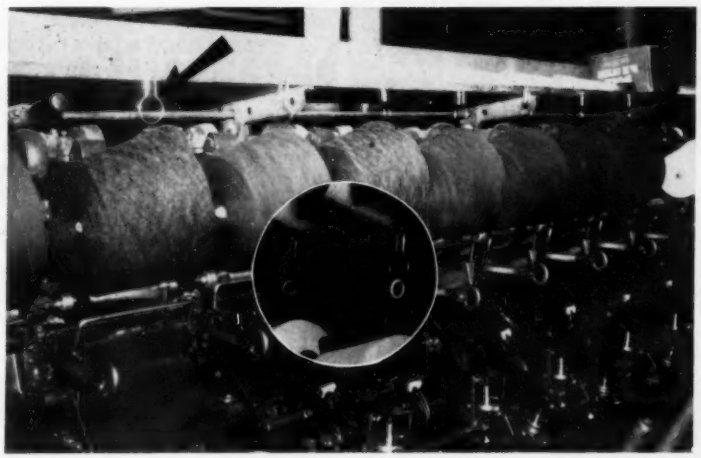
.0277 ÷ 8000 = $.0035 per 1000 picks

An important consideration in assigning loom loads in a mill where numerous styles are run, is the use of the knowledge of how easy or difficult to weave the individual styles are. All of the accuracy and study in the world will not make the rate system work well if the loom load is top heavy with difficult styles; if the weaver must devote most of his time to the difficult ones, he will never make the picks, even on the easy ones.

The assignment of the loom load may also be tempered by the skill of the individual weaver; the better weaver can make his picks more readily with more difficult styles than can a weak weaver; conversely, it is not sound to assign difficult styles to the weak weaver in more than token quantities.

CONTRIBUTOR NO. 8851

Shower Rings Help Maintain Cone Size Regularity



At General Spinning Corp., Lowell, Mass., Foster No. 30 cone winders are not equipped with stop motions. To assist operators in keeping uniform cone size, these shower curtain rings were placed over bottom position of cones. When the cone builds up to the point where it hits the ring (arrow), the operator's attention is called to that cone and the spindle is stopped. If setting for smaller size cones is desired, small rings (inset) are hung onto base ring.—*Staff.*

HOW OTHER MEN MANAGE

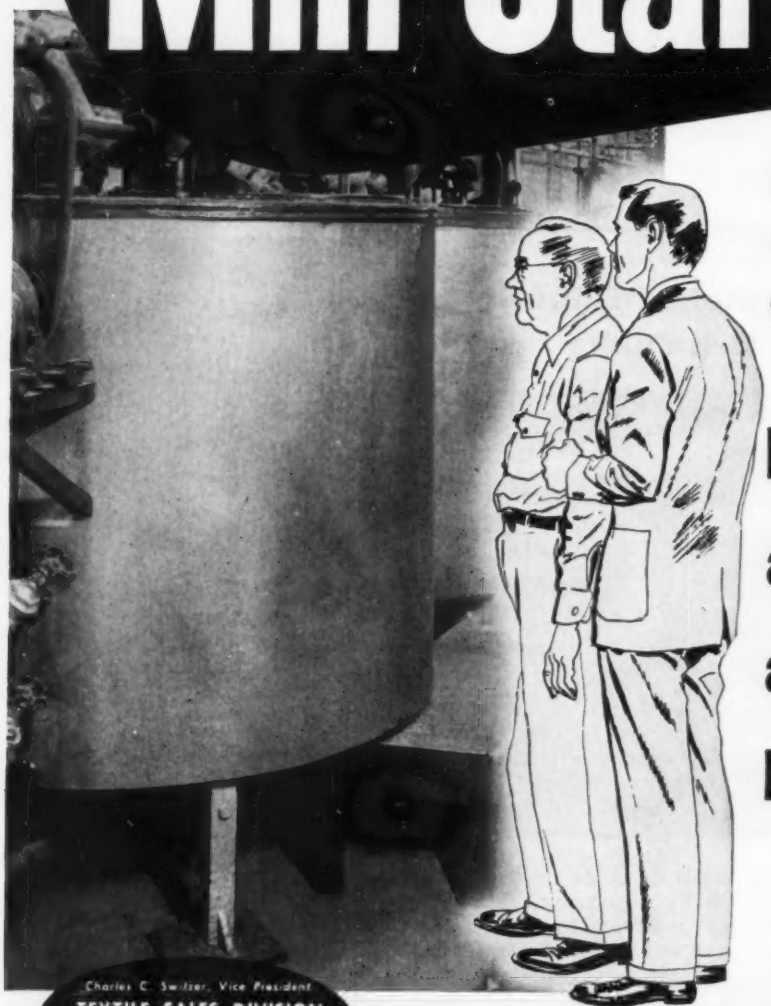
"Tam-O-Shanter" Stone Recommended for Newly Engraved Print Rolls

PRINT ROLLS just engraved at the Arnold Plant, USF-Aspinook Finishing Division of the Gera Corp., Adams, Mass., have been found to be best smoothed off by use of the fine "Tam-O-Shanter" stone shown being applied to a roll in this photograph.

Careful smoothing is required so that the printing machine doctor blades can clean the surface of roll thoroughly and prevent "scummy" printing. Rough spots on print rolls will also damage doctor blades.—*Staff.*

VICTOR Mill Starch

A KEESTAR PRODUCT



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HOW OTHER MEN MANAGE

Weaving Glass Yarn From a Creel? Try This Space-Saving Arrangement

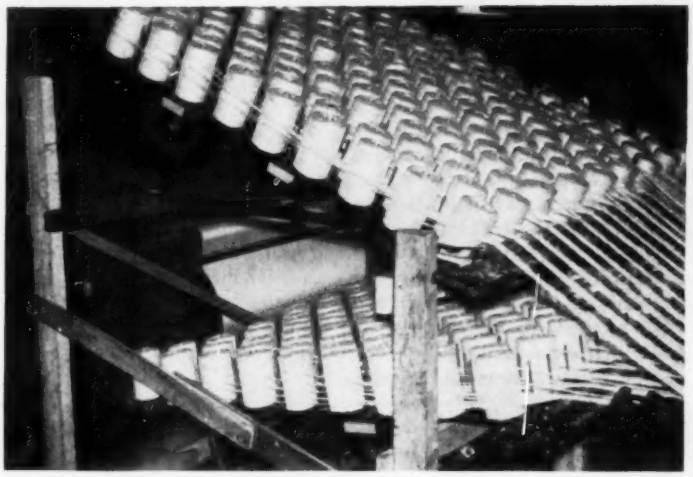
EDITOR TEXTILE INDUSTRIES:

We are weaving a very heavy glass yarn which runs about 300 yards to the pound. It is not practical to warp this type of yarn, so we are running it from a creel.

Because of limited space, we could not use a wide creel, therefore we are using two smaller creels, one of which is set above and a little in back of the other.

The packages are quite large, and the yarn had too much drag, even though we used rolls to help turn it off.

To overcome this, we took the two creels, built a rack for them, and turned them on their backs, as shown in the accompanying photograph. The bottom creel is slanted downward slightly, and the top creel upward, so that the yarn will have less pull.



With this arrangement we are able to weave the heavy glass fabric successfully.

CONTRIBUTOR No. 8810

Quick Mix for Asphalt or Paint

EDITOR TEXTILE INDUSTRIES:

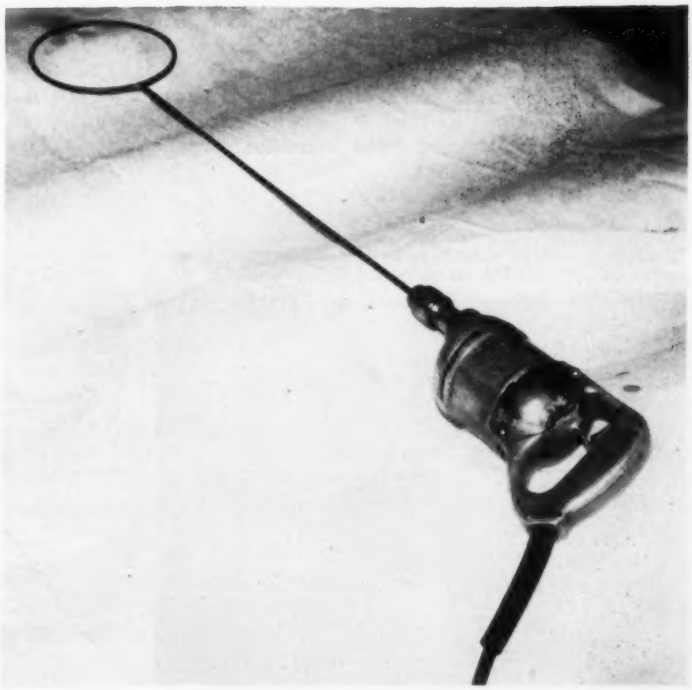
We treat some of our fabrics with asphalt, and the asphalt has to be thoroughly mixed before it is applied to the cloth.

This is a new venture for us, so we coat the cloth on an old slasher —one of the type where slashing is done from beam to beam. It is ideal for this application. The asphalt comes in drums, and, since we have no mixing tanks on this slasher, we mix it in the drum.

To make a mixer, we took a length of ¼-inch round stock, bent one end in a complete circle, and put the other end in an electric drill. This improvised mixer will whip a whole drum of asphalt to a creamy lather in a few minutes.

For mixing paint, we made a smaller model of the mixer. It will mix the amount of paint in two minutes that would take a man with a stick twenty minutes to mix, and does a better job.

CONTRIBUTOR No. 8730



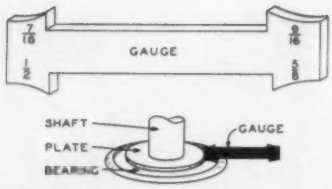
HOW OTHER MEN MANAGE

Wool Carders: This Gauge Makes Rub Apron Adjustment a Cinch

EDITOR TEXTILE INDUSTRIES:

Frequent changes in the length of stroke of rub aprons on the tape condensers of a woolen card set are often necessary when a mill runs a big variety of stocks. As was the case in a personal experience, lighting at the tape condenser is not always sufficient to allow easy eccentric adjustment. Making an adjustment that has to be accurate to a sixteenth of an inch, holding a flashlight, a rule, and a wrench (or wrenches), can be a trying experience.

To eliminate this inconvenience,



speed up eccentric setting, and to make bank to bank rub adjustments more accurate, I had two gauges made, one of which is shown in the accompanying sketch. The gauges, designed for adjustments on Whitin tape condensers, are made of steel, 5/32 inches thick, and can be used for settings of 7/16, ½, 9/16, and ⅝ inch from one gauge; and 11/16, ¾, 13/16, and ⅞ inch from the other.

The sketch also shows the eccentric shaft, plate, and bearing, and the manner in which the gauge is used. The edge of the plate is used as a shoulder for the forward edge of the gauge; the distance between this point and the inside edge of the bearing governs the length of apron stroke, and is set by use of the appropriate face of the gauge.

CONTRIBUTOR No. 8858

Device Stops Pick Wheel for One Pick— Double Pick Gives Novelty Effect

EDITOR TEXTILE INDUSTRIES:

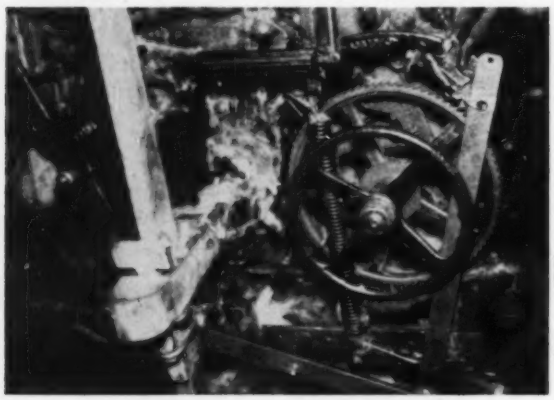
We were running an inner lining for ties made from 2/28s crossbred wool in warp and 20 picks of 28s/2 crossbred wool filling. Upon exhausting our supply of 28s/2 filling, we decided to use a large amount of 20s/1 we had on hand.

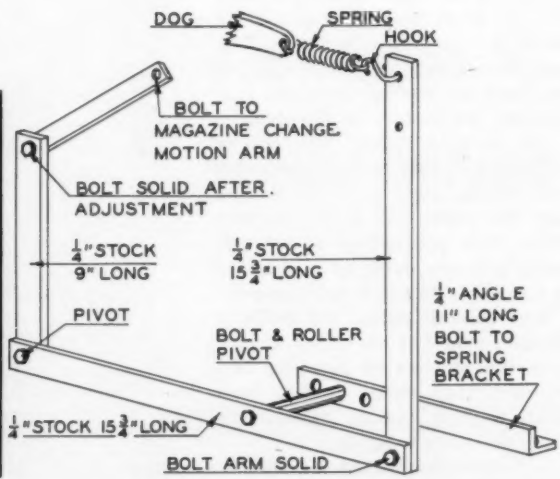
The looms put in 40 picks of 20s/1 at two picks per shed, but it was suggested that if we stopped the pick wheel for one pick the change would give us a better effect in the cloth by having the double pick beat in on one pick of the pick gear.

The accompanying illustrations show details of the device which I developed to do the job. The arrangement works from the magazine motion cam arm and could be used for special effects. It is faster than using dobby jacks, which are sometimes used to accomplish such effects. We fixed up four looms and used most of the 20s/1 which had been on hand for a long time. Although the cloth was somewhat different, for the purpose of inner lining ties, the customer was satisfied.

CONTRIBUTOR No. 8686

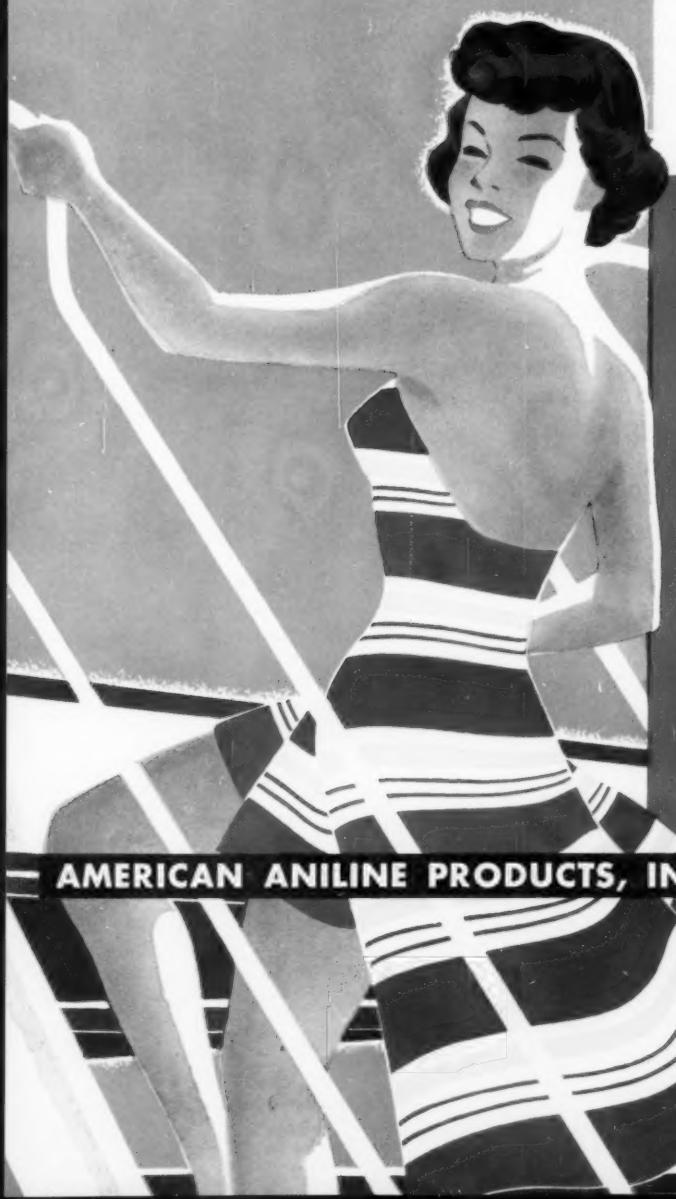
THIS DEVICE stops the pick wheel for one pick, to produce a novelty fabric. It is a faster method than using dobby jacks for the purpose.





Acetate colors

for every need



A.A.P. was the first successful U. S. producer of dyes designed specifically for acetate fibres, and its constant stress on quality has made and kept AMACELS the top-ranking favorites in this field. ***New, improved*** AMACELS provide a popular range of colors for dyeing acetate fibres of every type. Listed below are a few of the reasons so many leading acetate dyers rate these colors ***tops*** for quality and reliability.

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EXCELLENT FASTNESS to light, gas fading, sublimation, decatizing.

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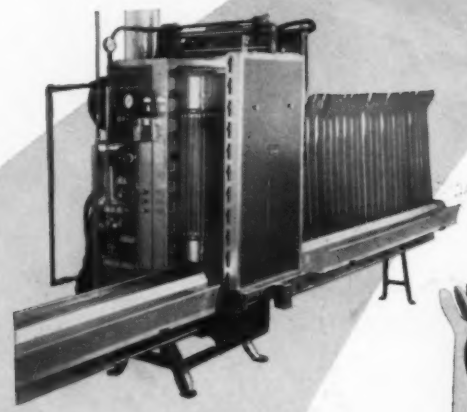
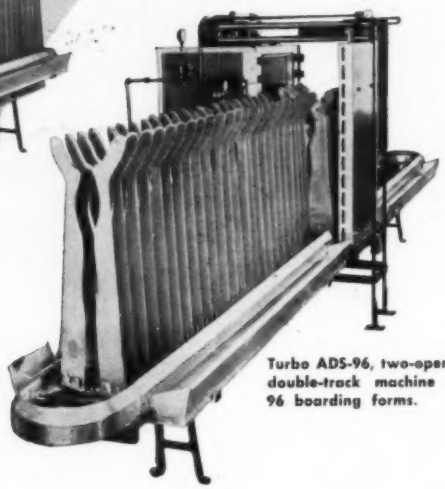
NOW... FOUR-CYCLE OPERATION

for complete control of finishing according to the after-dyeing method of plasticizing all types of hosiery or garments, stretch or conventional

... The Turbo ADS-48 ... The Turbo ADS-96



Turbo ADS-48 Combination Preboarder/Finish Boarder. There are 48 forms, 24 each on conveyor tracks to the right and left of the setting cabinet.



Turbo ADS-96, two-operator, double-track machine with 96 boarding forms.

The new Turbo ADS-48 and ADS-96 with four-cycle operation provide:

(1) timed preheating and preconditioning boards and fabrics to uniform temperatures and dryness for the control of excessive condensation.

(2) timed solenoid-controlled air expulsion allowing for top preboarding temperatures to be reached quickly at saturated steam table pressures, further reducing condensation. The higher pressures necessary for an air and steam mixture are avoided.

(3) timed temperature controlled steaming cycle can be shortened considerably, further checking excessive condensation.

(4) timed air drying cycle can be shortened because of minimum condensation. The cabinets are lined with finned heating coils. For still more efficient drying, a recirculating air preheating stack is optional equipment.

These new features for the control of temperature and condensation reduce bleeding and splotching due to hot water collecting on the boards . . . reduce steam consumption, reduce processing time . . . cut your finishing costs. Write for the "Four-Cycle" story today.

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Southern Representative: F. W. Warrington Co., Charlotte, N. C.

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Knitting Section

IN THIS SECTION

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Cut Full-Fashioned Yarn Costs by Knitting Directly from Pirns

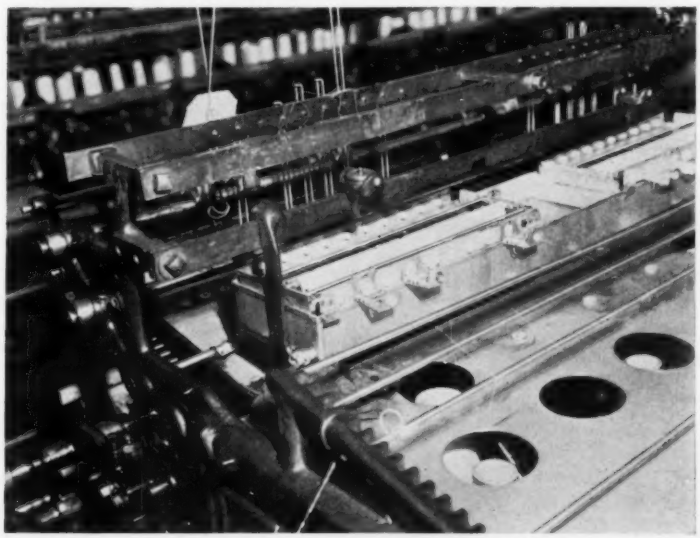
BY SAM BOYER

EXCLUSIVE

KNITTING full-fashioned hosiery directly from pirns, instead of using thrown yarn, cuts initial cost of yarn approximately 20 per cent or more. This method also saves from four to six weeks delay in delivery of yarn, by elimination of the extra processing required when the yarn is sent to the throwster.

Uniform Tension Necessary. When knitting yarn is used directly from pirns, some difficulties are certain to arise unless alterations are made in the eyelets of the conventional yarn boxes supplied with the knitting machines. The small eyelets in the yarn boxes act as a brake in the free unwinding of yarn as it is knitted from the pirns, and are a direct cause of much unevenness in length of the finished stockings. *(see page 167)*

YARN BOX has 2 13/16" hole cut directly above each pirn. Ceramic eyelet was used as a center for each hole.

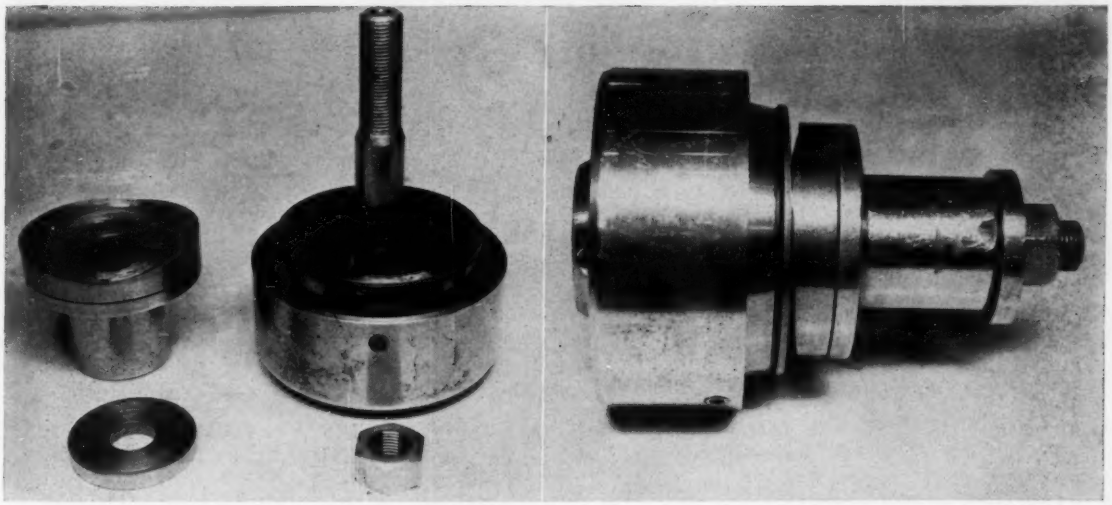


Nearly every competitive advantage starts with the machine

Study the technical superiorities and production economies of this *improved* "Reading 100". Watch it in action. Check its flexibility and smooth, high-speed operation. See the quality of its knitting. Then figure the arithmetic of this *improved* full-fashioned knitting machine and know what it can mean to you in higher quality and lower per-dozen costs.

The "READING 100"
Full-Fashioned Knitting Machine

Machinery Division
TEXTILE MACHINE WORKS · READING · PENNA.
Builders of Textile Machinery Since 1900



CUTTING TOOL for making holes in yarn boxes consists of an outside cutting face, inside cutting face, pilot stud, nut and washer, and tool holder. Left photo shows the component parts of the cutter, and right photo shows a fully assembled cutter. Note that the outside cutter can be adjusted to fit the inside cutter by means of three setscrews positioned equidistantly around the tool holder sides.

(Continued from page 165)

To overcome the uneven tension, our hosiery mill designed a cutting tool suitable for making 2-13/16″ holes in the yarn boxes, which allow the knitting yarn to balloon freely as it is withdrawn from the pirns. The ceramic eyelets were removed before cutting the holes

Construction of Cutting Tools. The cutting-tool, which has made the use of pirn yarn practical for us by altering the yarn boxes, is shown in an accompanying illustration. The actual cutting face, shown to the left-rear in the photo, was made from the outer race of a discarded truck bearing; the actual dimensions of the cutter are: outside diameter 2-13/16″, total height of two cutting lips which rise to a peak on opposite sides of cutter face are ⅞″, height of shallow sides of cutting face are 7/16″, and the inward slope of cutting edges is about 30°, as is shown in the illustration.

The cutter face was sweated onto an adapter, which in turn fits very snugly over a ¾″ pilot stud; the pilot stud is 4⅛″ long, plus 1⅞″ for ⅝″-18 threads, making a total length of 6″. The pilot stud is firmly centered in the outside cutting tool by being screwed into the tool holder base, as is shown in the right side of the illustration. It is also essential to use a nut with a heavy washer underneath to prevent binding when in use.

The outside cutter was also made from a discarded truck bearing inner race, which has an internal diameter of 2-13/16″; this dimension allows the inside cutter to slide freely within the outside cutter when applied to the cutting operation. Actually, several thousandths of an inch clearance between the inside and outside cutters is desirable, rather than having too close tolerance.

Cutting the Yarn Box. In applying the tool to the cutting operation, the eyelet hole in the yarn box is first enlarged to ¾″ to accommodate the pilot stud; the pilot stud is next inserted in the hole from bottom to top, and the inside cutter dropped over the pilot stud from the top side. Next, the washer and nut are placed in position and tightened with a ratchet type socket wrench.

If the tool is correctly sharpened and designed, a clean-cut 2-13/16″ disc will be removed from the yarn box top, which will allow the knitting yarn to pass freely without snagging or binding. This result cannot be obtained with the conventional hole saws on the market; we have not found such a saw which will cut the stainless steel of which the yarn boxes are constructed.

Pirn Holders. The pirns have either 9/16″ or ⅞″ holes in the ends, which must be placed over the ¼″ pegs in the yarn boxes. The natural vibration of the machines in knitting causes the pirns to become misaligned with the holes in top of the yarn boxes, and either tight or loose selvages result in the knitted stockings.

To overcome this difficulty, we used the separators in the discarded pirn cases to make pirn holders for the knitting machines (see illustration). The pirns come in two different sizes, so we used a 1⅜″ and a 2″ hole saw to make cut-out recesses in the corrugated paper-board.

The pirn holders are made to fit over three pegs in the yarn boxes, and prevent the pirns from moving about during knitting. In making the holders, only the first layer of cardboard and the inside filler are cut, leaving the bottom layer intact; then the cut-out circle of material is lifted out with a sharp knife, leaving a neat pirn holder as is shown in the illustration. Different combinations in the two sizes of holes are sometimes necessary in one holder.

Another illustration shows two large splicing-yarn pirns in place in the yarn box, with the smaller main-yarn pirn in the center; this required a 2″ hole in each end of the cardboard pirn holder, with a

THIS MAN HAS HUNTED ALL OVER CREATION. But when it comes to tracking down a complete selection of needles he knows right where to go. After all, there is only one correct answer—for knitting, sewing, tufting, or felting —it's **THE TORRINGTON COMPANY.**

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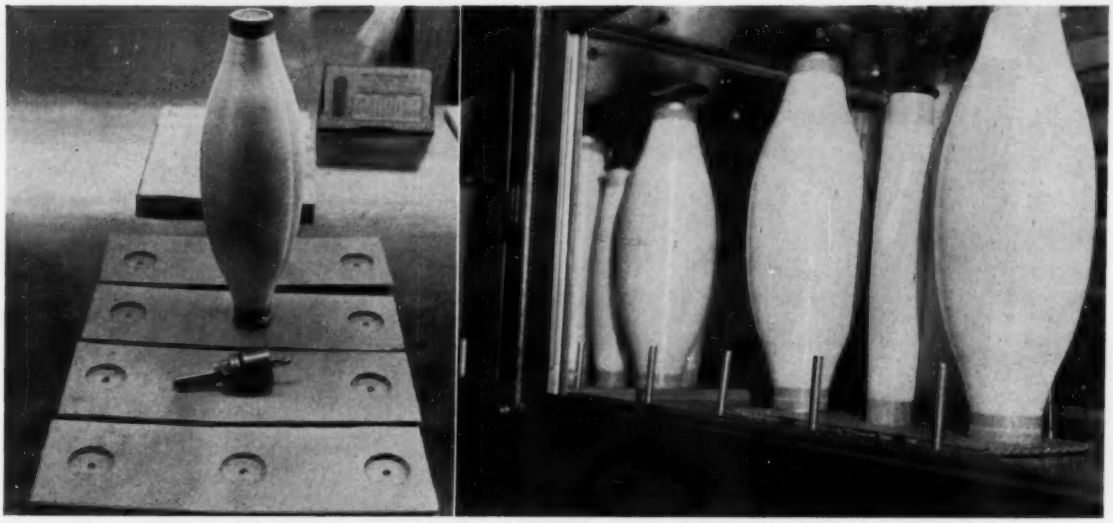


PIRN HOLDERS are made from separators used in the shipping cases for the pirns. Left photo shows how the pirn holders are cut, and right photo shows one in place in the yarn box.

1⅜" hole in the center.

The cardboard pirn holders are simple to make, requiring less than half an hour to make a complete set for a 32-section knitting machine. The material costs nothing when extra pirn separators from cases not needed for returning pirns to manufacturer are used.

Results. The simple procedures outlined in this article are inexpensive, but the results are gratifying in increasing percentages of straight-sided stockings; also there are the advantages of lower yarn costs, plus saving several weeks lost time in throwing.

Costs of the yarn box cutter will vary perhaps from $20 to $35. We took our design to a local machine shop and had it made according to specification. Others interested could, of course, do the same.

Relationship Between Salesmen and the Manufacturer

In a recent issue of the "Hosiery News Letter" of the National Association of Hosiery Manufacturers it was reported that the committee for the children's and infants' branch of the hosiery industry is considering ways and means for improving the quality of salesmanship in that field and for improving the relationship between the production and the sales departments.

Because it was considered by both the committee and the Association's board of directors to be "such an excellent statement of the problem," a memorandum submitted for the committee's consideration in determining basic objectives is reproduced here.

The author's firm is a knitting mill agent handling infants', children's, and misses' hosiery.

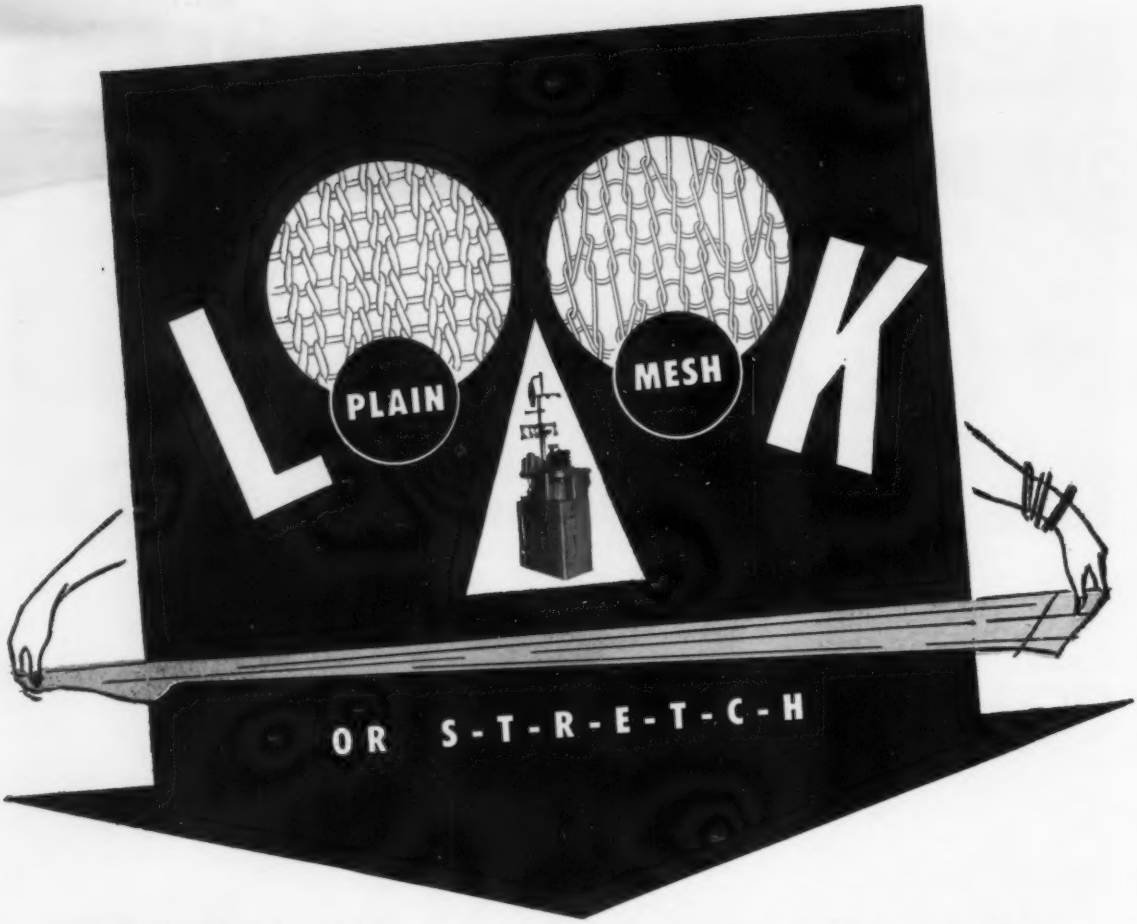
BY EDWARD HEATHCOTE
Heathcote Hosiery Co.

THE ESSENTIALS are honesty, effort, and knowledge.

You will note that I put honesty first. It is a recognized fact that all people are essentially honest. We seldom meet a dishonest person. When we do, we should have nothing more to do with that person. Therefore, honest, frank expressions and actions should constantly be practiced by both the Salesman and the Manufacturer. They should never endeavor to be evasive as evasiveness leads to distrust.

Effort—This also applies to both the Salesman and the Manufacturer. Applying oneself 100% to the job which he has to do is of the greatest importance in the success of both seller and manufacturer. Too many salesmen lack the ability to apply themselves, for many reasons. One is that they would rather spend hours in idle conversation or they are of the non-aggressive type, the procrastinating type, the type that puts off until tomorrow what should be done today.

I have listed knowledge in the third place, appreciating fully that knowledge of the industry is especially essential for the salesman, otherwise he cannot appreciate the problems involved in the mills and the tremendous expense involved in the various manufacturing operations. However, with the proper knowledge and some mill experience, acquired either by working in the plant or by many years of experience in contact with the manufacturer, he can eliminate unnecessary styles or color combinations, simplifying production which he could not help to do with-



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Manufacturers can now make their hosiery production as flexible as changing market conditions . . . produce top quality seamfree ladies' hosiery—plain, mesh, or stretch—at the push of a button!

Write for stocking samples today. Or stop in and see the new, electronically controlled Fidelity 400 in operation at our showroom.

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out mill knowledge. Of course, the creation of a sale is of the utmost importance and the sale must not be jeopardized by excessive simplification of the mill's merchandise.

However, every young salesman should be obligated to learn something about textile engineering. Too many salesmen know absolutely nothing about mill production and the manufacturing problems of the merchandise which they are selling. It is a recognized fact that buyers appreciate a salesman who can answer intelligently textile questions. The period of the old style drummer with his carnation and story-telling is a thing of the past. Salesmen with the proper knowledge of the manufacturing industry are more successful.

From the above, you will note that I have endeavored to outline the necessary requirements of both the salesman and the manufacturer.

Let's review and elaborate just a little. If either person questions the statements of the other it cannot lead to a successful business arrangement. Both salesman and manufacturer must trust each other implicitly. They must work closely together at all times. Salesmen must always sell not only the merchandise, but the mill and the people involved in the management of the mill, in order to build up a strong goodwill for that mill among the trade.

It also applies very strongly on the part of the manufacturer, when a buyer calls on the mill, that the manufacturer must express his confidence in his salesmen and endeavor to convey to the buyer the necessity of informing his salesman of the full conversation of the meeting and always endeavor to support every stand that the salesman has taken with the buyer. Too many times goodwill is broken by one party or the other in order, apparently, to gain favoritism for themselves. When something of this sort is practiced, it leads to distrust of the mill and the salesman on the part of the buyer and works against the best interest of all concerned.

This may all be classed as goodwill and in order to continue to strengthen this goodwill the manufacturer should visit the trade with his salesmen as often as possible so that he will not only realize the problems of the salesmen but, more essentially, that he will learn the requirements of his customers. When the requirements are fully understood the manufacturer will practice them and see that they are diligently carried out.

An order must be looked upon from a personal angle and it should be realized that behind every order an individual had given considerable thought in the preparation of the order as well as in the placing of it, and that great care should be given to filling an order not only on the due date, but seeing that it is carefully handled, packed, and shipped.

It is essential that the salesman at all times think on the human angle or mill help, that uppermost in his mind is the fact that directly dependent on him is the employment of so many people in that plant. If he will keep this in mind he will never be negligent in his duty as salesman.

The A B C's of Knitted Fleeces

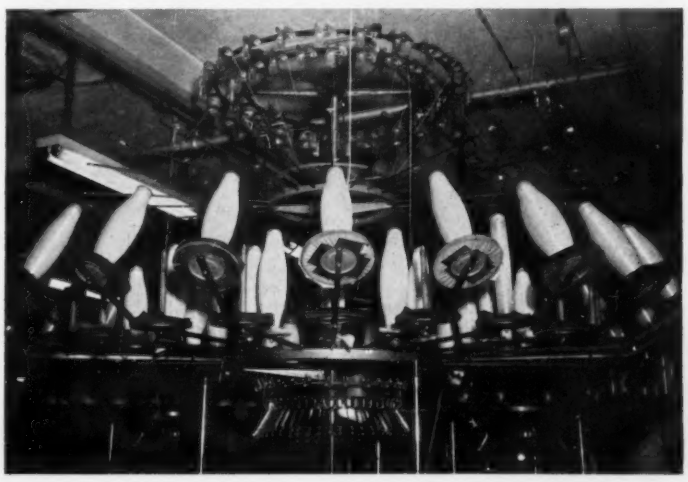
Knitted fleeces were the forerunners of the currently popular fur-type knitted coatings. Here's how the fleeces are made.

STAFF PREPARED
EXCLUSIVE

THE BASIC PROCEDURE for producing circular-knit fleeces includes knitting a fabric consisting of both a ground and a loop pile system, in the grey, in the grey with resist dyed decoration effects, or yarn dyed; splitting; dyeing (if appropriate); raising a pile; tentering; and examining.

At Empire State Mills, Inc., New York City, most of the fleeces produced are of the basic piece dyed type, and facilities are available for all operations except dyeing. Finishing, the secret of success of a fleece, has been developed over a period of years by company president Arthur Brook; much of the equipment is of his own design. *(Continued on page 173)*

STANDARD LOOP KNITTING for both rayon-acetate and nylon fabrics calls for loop cams, needles, sinkers, and carriers. Tensioning of ground yarns is higher than for loop yarns. Shown here is pirn creeling of nylon for fleece knitting.



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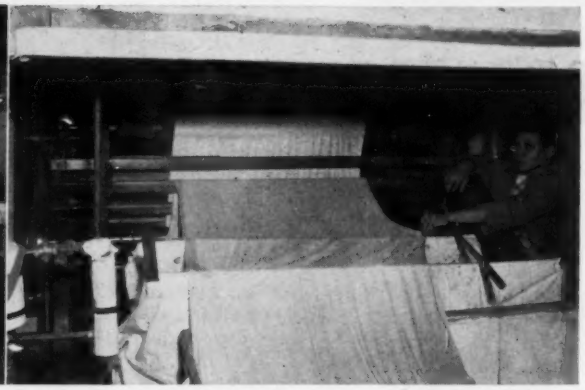
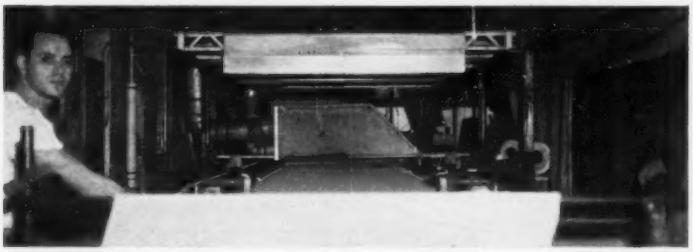
DIVISION OF CROWN ZELLERBACH CORPORATION

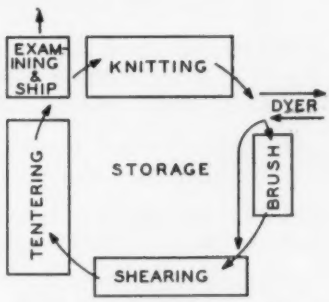
NYLON FLEECE is produced on this two-stage napper. Function of unit is to break loops and form short matted pile.



RAYON-ACETATE FLEECE is made on this adapted tigering machine, which breaks loops and forms long pile. Feed end, including steam injector, is shown.



TENTER is dual-purpose unit. Shown here is set-up for steam injection; hood, upper center, is lowered for heat setting function. Heat setting is instrumented and double checked with pyrometer.



FLOW OF MATERIALS in plant is circular. Goods are knitted, dyed, and split outside of mill and returned to be brushed or sheared, tentered, examined and rolled, and shipped.

(Continued from page 171)

Constructions. Two basic fabric styles are currently in production:

1. A high pile fabric consisting of a 150-denier rayon back and a 150-denier dull acetate looped pile. This fabric is used for ladies' blouses, sweaters, T-shirts, scarves, theatricals, and slippers.

2. A short napped fabric consisting of a 70-denier nylon back and a 210-denier nylon looped pile. This fabric is used primarily for ladies' coats and has gained recognition as being hand or machine washable with a drying cycle of about half an hour.

Both fabrics finish at around 48 inches, and both are knitted either on 42- or 50-gauge Supreme machines. Outside of these two standards, fleeces and flat fabrics are made at Empire using cotton, rubber, Orlon, dynel, alpaca, Dacron, etc.

Knitting. Machine part installations for the fleece work are standard as for any loop fabric knitting: loop cloth cams, concave or milled needles, and No. 1, 2, or 3 loop pile sinkers are run. The numbered sinkers are varied depending on whether low, medium, or high pile loops are desired; at Empire specially built sinkers are commonly used for loops higher than obtainable with No. 3 sinkers.

Another special part for loop pile knitting is the yarn carrier, which must be set so that it does not interfere with the motion of sinkers.

Maintenance of cams is critical, and they are checked often for wear and repolished as needed, generally about every two or three months.

Creeling is standard; the rayon-acetate fabric is put up on producer's cones and the nylon is knitted from producer's pirns. Yarn tensions are somewhat higher for ground than for pile yarns.

Setting up and adjustment of knitting machines can be said to be guided by "the feel of it" rather than by gauge setting.

As is the case with many knit goods, production is simple once the machine is set up properly; incidence of pin holes and drop stitches is negligible on loop pile knitting at Empire.

Dyeing. All dyeing is sent out and done on a commission basis. The dyer also splits the fleeces, but some splitting is done by the knitting mill.

Raising Pile. Depending on the type of fleece being made, either a brush or a napper is used to raise a pile.

In making the high pile rayon-acetate cloth, a brush is used to break the acetate loops and pull them into a long pile. In the nylon short napped fleece, a two-stage continuous napper is used to break the loops into a short matted pile.

The brushing equipment is a mill-adapted job. Basically it is a tigering machine originally used to produce fleece-lined underwear.

Napper roll maintenance is important; the mill has found that it is better and cheaper in the long run to replace worn rolls rather than to grind.

Setting-Steaming-Tentering. Because of the widely different work required in this last finishing process, a dual purpose tenter was designed. The machine is a McCreary tenter which was built with a removable heat setting hood with presetting instrumentation capable

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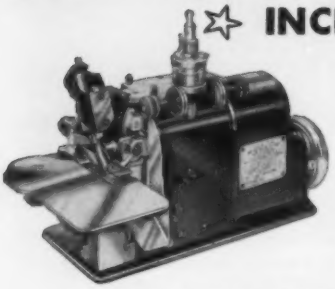

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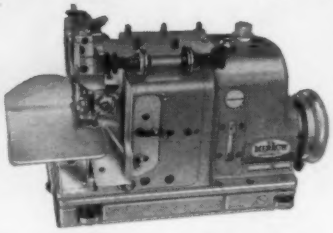

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☐ Enclosed find $3.00 ☐ Bill me for $3.00

of maintaining uniform temperatures. This unit can be thrown out of play and simple steam tentering performed.

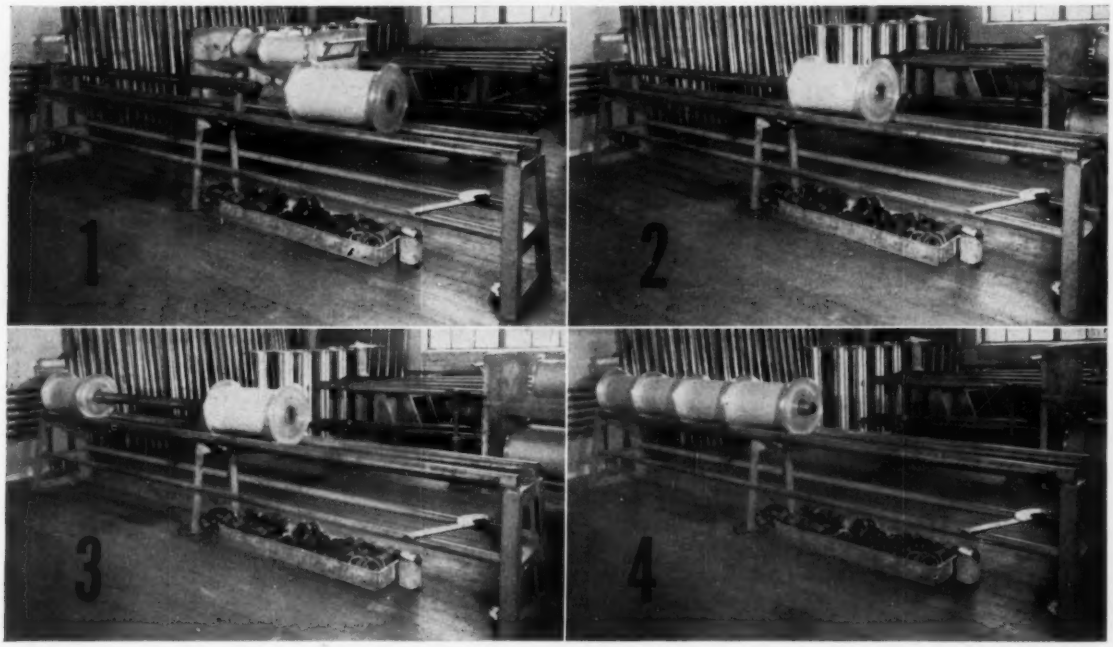
In finishing the nylon fleece, the heat setting unit is used at the temperature found most suitable for the fabric being processed. Setting temperature, controlled by automatic variation of tenter speed, is manually checked with a portable Alnor pyrometer at a point where the goods emerge from the setting chamber, as a double control of this critical factor.

The setting unit is raised and the steam injector adaptation activated when the rayon-acetate fleece is being worked.

Flammability. Much of the impetus for the Flammable Fabrics Act originated in reported (but not litigated) cases of rapid burning of women's blouses made of high pile knitted fabrics in which the pile was rayon. Generally, Empire State Mills' production has been confined to acetate pile fleeces; and if rayon pile fleeces were previously made at market insistence, the mark "Highly Inflammable" accompanied shipments.

The registered mark "Neva-Flare" appears on hang tags available for use on all Empire fleeces.

Tricot Beams Easily Assembled With Mill-Made Rack



BY GEORGE W. TAYLOR
Maintenance Engineer
Fulton County Silk Mills
Gloversville, N. Y.

EXCLUSIVE

THE DEVICE shown in the above photos was built and is being used by the Fulton County Silk Mills to provide a simple means of assembling bobbins on the tricot machine beam tube.

Photograph 1 shows the rack, consisting of two end "A" frames welded from 2" angle iron. Two tubes were welded on top of the "A" frames to form a track for the bobbins to slide on.

Two supports (which can be seen under the tube in photograph 1) were placed to hold the beam tube, and a stop-block was built up on one end to take the thrust of moving the bobbin on the tube. The two supports are pivoted and held in place by a small felt friction disk. Adjusting a bolt behind each disk places the desired friction on the support.

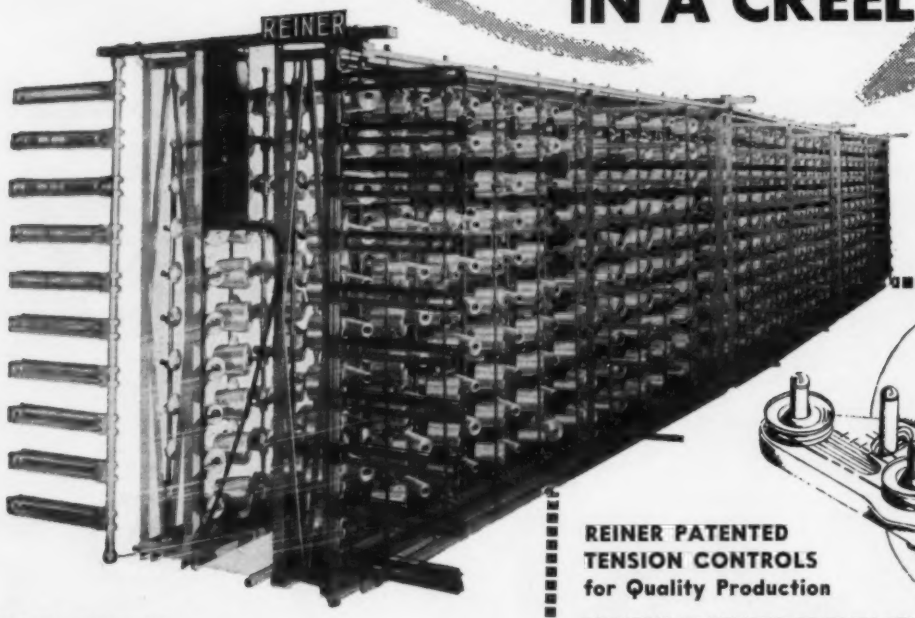
Photograph 2 shows a bobbin being pushed onto the tube and the first support being pushed clear by the bobbin. The bobbin therefore takes the place of the support.

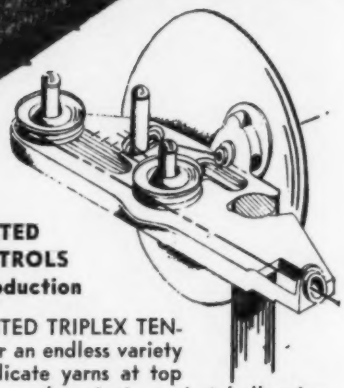
Photograph 3 shows the first bobbin moved up to the second support and the next bobbin taking its place. Bobbins are pushed on in their proper order, the beam tube being held in line either by the supports or by the bobbins themselves.

When the bobbins are all in place (**Photograph 4**), the beam clamp is placed on the beam tube and an electric hoist moves the beam to a beam cart, which carries it to the tricot machine.

This rack is also used to remove the beam tube from the bobbins. The empty unit is placed on the rack in the opposite position and the tube is merely pulled from the four bobbins.

REINER Offers Everything You Want IN A CREEL





REINER CREELS—

The most modern in use—have many features. Time-tested and proved in mill operation, they provide for savings in labor—producing better warps at higher speeds. They are readily adaptable to pirns of all sizes and all types of cones or cores.

Reiner magazine or single type creels give unmatched performance for any space or functional requirement. Truck creels for quick doffing are also available.

Reiner offers a full line of warpers and beamers.

All Reiner equipment is readily adaptable for use with units of other make.

From Cone to Knitted Fabric—From Creels to Warpers—From Knitting Machines to Tenter Frames—You Can Depend On Reiners For Superb Workmanship, Low-Cost, Profitable, Efficient, Trouble-Free Production!

REINER PATENTED TENSION CONTROLS for Quality Production

REINER'S PATENTED TRIPLEX TENSION provides for an endless variety of settings of delicate yarns at top speeds. A metal guard protects against ballooning yarn—eliminates breaking or nicking. Four different weights of tension washers meet all possible requirements. All posts are movable and the slots calibrated for easy setting. Alsimag or porcelain eyelets—tension posts available in Alsimag or satin-finish hardened chrome.

Other tension arrangements with single or double posts—tensions with loom type stop motions—tensions for crepe or special yarns—mercury—loom type—mechanical stop motions for any yarn or special requirements.

Write for complete details.

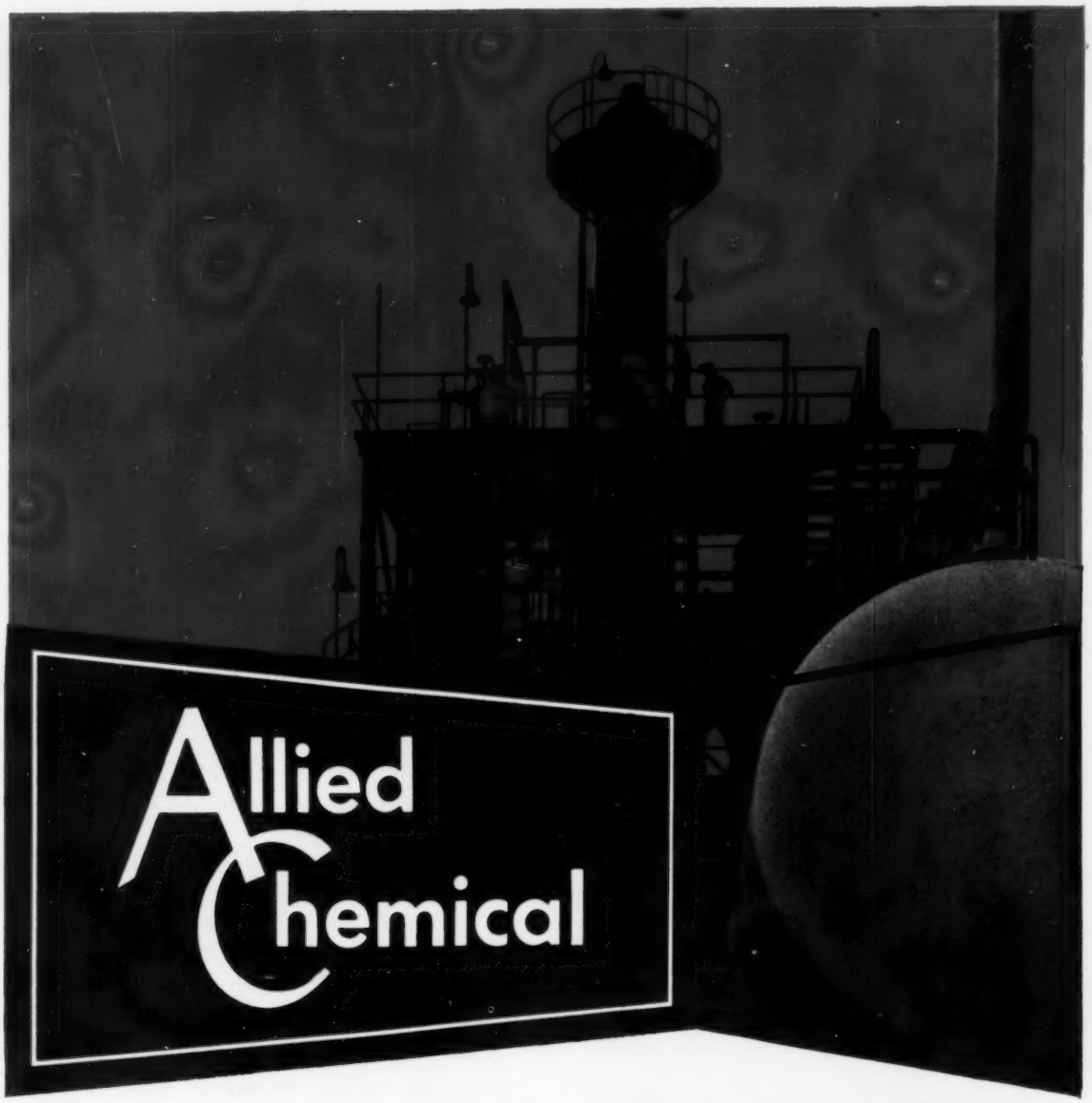
Also ask about the most recent addition to the complete Reiner line — the Reiner Warp Oiling Device.

ROBERT REINER INCORPORATED

10 MINUTES FROM TIMES SQUARE

Take Bus Nos. 61 or 67, from Platform No. 60, Port Authority Bus Terminal, 41st Street and 8th Avenue, New York City. Get off at Pleasant Avenue, Weehawken, New Jersey. From there turn left and walk through the underpass up to Gregory Avenue . . . TELEPHONE: UNION 7-0502, 0503, 0504, and 0505. From New York City call LONGACRE 4-6882.

FOUNDED IN 1903 — 550-564 GREGORY AVENUE, WEEHAWKEN, NEW JERSEY



ETHANOLAMINES

Treating gas with mono or diethanolamine? Allied's Orange, Texas, plant—most modern in the industry—can supply you with ethanolamines consistently above standard specifications. Shipments in tank cars, tank trucks or 55-gallon drums available from Orange, Texas. Nationwide stocks for delivery by tank truck and 55-gallon drums. Phone or write for samples, quotations, literature, technical service with no obligation.

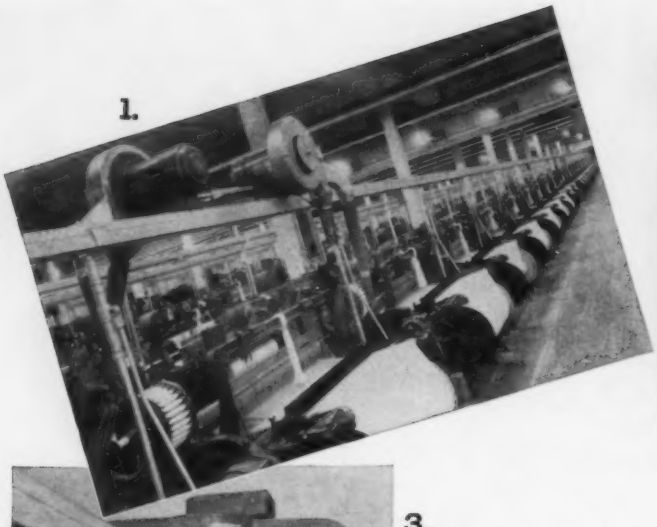
Dept. EA 2-29-2

Allied Chemical — NITROGEN DIVISION

Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Solutions • Nitrogen Tetroxide • Fertilizers & Feed Supplements

40 Rector Street, New York 6, N. Y.

1.



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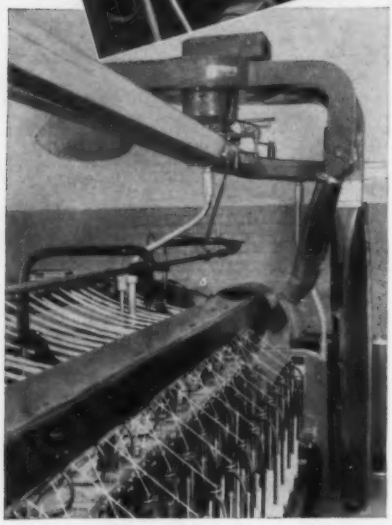


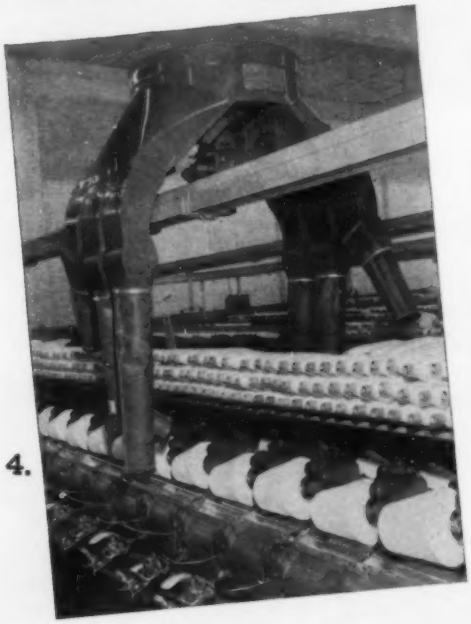
3.

Parks-Cramer®

Since 1926 Parks-Cramer Traveling Cleaners have helped hundreds of textile mills make more and better yarns and fabrics at less expense. Early models were used mostly for cleaning creels of spinning frames.

Continuous development and improvement have extended cleaning ability to all areas of the spinning frame and to other machines throughout the yarn and fabric mill.

The idea of cleaning the ceiling, first originated in 1928, has similarly been extended. Now we clean all room surfaces from ceiling to floor—even collect and remove the sweepings automatically!



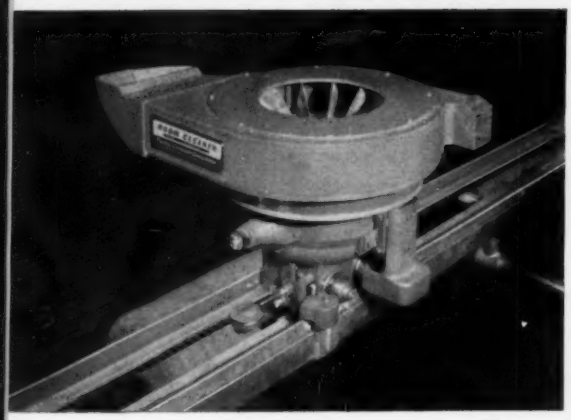
4.

1. LOOM CLEANER (Type CTL). Air currents of ample velocity. Directed close to surfaces to be cleaned by fixed and oscillating air outlets. Means for automatic reduction of air over sensitive areas.

2. ROOM CLEANER (Type CBR). Hangs below single rail track. Air distributor revolves continuously. Directional control of air currents.

3. ROVING FRAME CLEANER (Type CTFV). Includes means for automatically reducing or deflecting air blasts while cleaner passes over a frame being doffed or creeled.

4. CLEANERS FOR WINDERS, SPOOLERS, WARPERS, TWISTERS. Similar to frame cleaners, with air distributors and outlets to suit the requirements.



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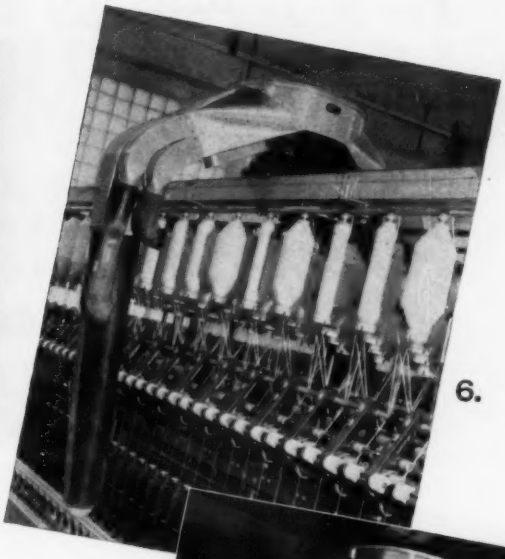


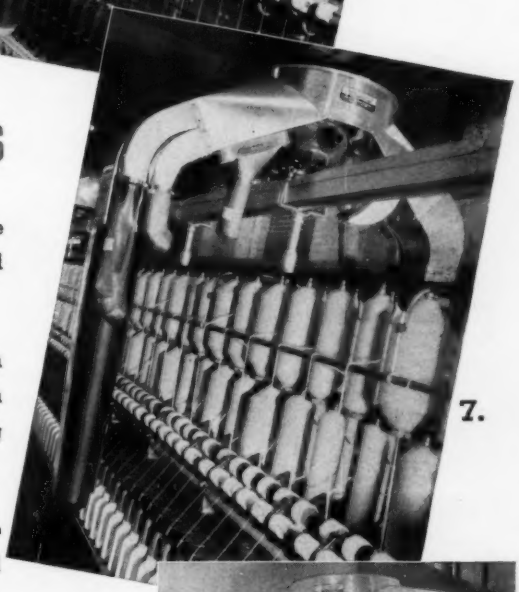
6.

Traveling Cleaners

5. **ROOM CLEANER** (Type CTR). Rides on and above its track. Air distributor revolves continuously. Used alone or coupled to frame cleaner.

6. & 7. **SPINNING FRAME CLEANER** (Type CTF). Fifteen air outlets. Single unit delivers air where needed with proper velocity and volume for each area including underframe.

8. **FLOOR SWEEPER** (Type CTS). Usually coupled to frame cleaner. Sweeps lint along floor to a central location from which it is removed by vacuum.



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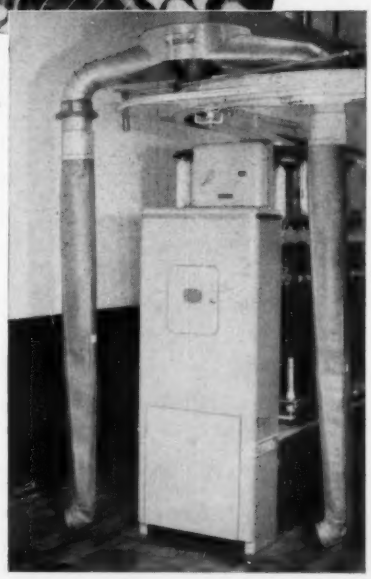


8.

All these Parks-Cramer cleaners are self-propelled. All air outlets below head height are flexible. Outlets are adjustable for air velocity and direction.

Rugged track construction. Shielded electrical conductor rails.

Parks-Cramer traveling cleaners save labor, increase production, improve product and working conditions.

For details and recommendations, consult:

Parks-Cramer Company

FITCHBURG, MASS. • CHARLOTTE, N.C. • ATLANTA, GA.

Established 1901

For More Profitable Wet Finishing . . .

Whirlaway

(BALL BEARING)

EXPANDERS

. . . to smooth and spread fabrics wrinkle-free

WITHOUT STRAIN!

Whirlaway Expanders, available in one, two and three bar models, make wet finishing operations far more profitable because only Whirlaways offer *all* these superior features:

MINIMUM TENSION — restores the fabric to original width without damaging strain.

FREE TURNING — means less drag, less wear and longer life for the rubber (or neoprene) sleeve.

NEOPRENE END SEALS — protect bearings from chemicals, dirt, moisture.

NEOPRENE SHAFT BOOTS — cover exposed ends of shaft affording full protection for metal parts.

UNIVERSAL BALL AND SOCKET MOUNTS — Rugged, easily adjustable neoprene ball and socket mounted in cast iron brackets allow quick positive changes in angle for various fabric approaches.

SEALED-IN LUBRICATION — Shielded bearings are grease packed for the life of the sleeve.

WHIRLAWAY EXPANDERS MAKE THESE MACHINES MORE EFFICIENT

Continuous Dyeing Machines	Mercerizing Ranges	Tenter Frames
Dry Cans	Open Width Washers	Dye Pads
Calenders	Quetsches	Water Mangles
Dye Jigs	Starch Mangles	

WRITE TODAY FOR BULLETIN XP 4

Leyland-Mycock Standard Expanders, for the fastest, most efficient *stretching* of fabrics, are available in one, three and five bar metal clutch or rubber covered models.

THOMAS LEYLAND MACHINERY CO., INC.

(Division of James Hunter Machine Company)

P.O. BOX 24 **READVILLE STATION** **BOSTON 37, MASS.**

SOUTHERN SALES & SERVICE: MARSHALL & WILLIAMS CORPORATION, 121 WELBORN STREET, GREENVILLE, S. C.

NEW EQUIPMENT PARADE

Machines and Equipment . . . Supplies and Services . . . Dyes and Chemicals . . . Books

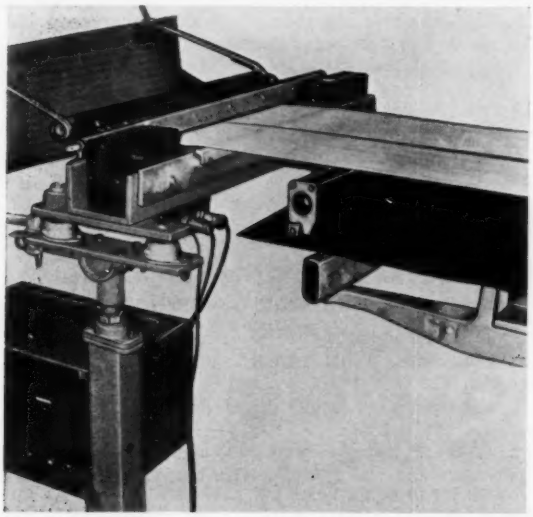
Please note: Claims made in all of these announcements of new developments are of necessity based upon information furnished by the respective suppliers.—The Editors

Automatic Yarn Inspector for Single and Multiple End Applications

The Lindly Automatic Yarn Inspector is a variable sensitivity optical and electronic device capable of measuring variations in yarn diameter on a single or multiple end basis.

It is designed primarily to perform as yarn inspector during some productive operation, eliminating the establishment of inspection as a separate job.

The yarn inspector can be used in statistical quality



control or in 100% inspection and repair, as the standard unit contains both a counter and a stop motion which can be used interchangeably or simultaneously.

On a single end basis variation in diameter both above and below the norm can be determined.

In multi-end application only variations above the average diameter will trigger the unit. However, in the detection of broken filaments in continuous multi-filament yarns individual broken filaments can positively be detected on a multi-end basis, such as in warping, irrespective of whether the broken filament has been compacted into a so-called puffball or snowball or not.

Light from an electronically constant source is passed through a lens and aperture arrangement which effectively renders the light parallel and screens out the unused portion.

The light falls on a double apertured optical system which takes the light and spreads to cover the photosensitive portion of the photo tube employed. The shape of the apertures determines to a large degree the directional sensitivity of the system. The apertures are normally constructed to accentuate differences or defects traveling with the yarn.

If yarn is introduced between the light source and the photoelectric system the inspection unit is able to determine diameter variations. The system is so designed that it is self stabilizing on a given condition. Consequently on a multi-end basis the individual yarn ends must be held extremely accurately so that they appear as one end to the entire system. Means of obtaining this degree of accuracy are built into the unit where this use is intended.

Electronically the amplification is designed to react to the rate of change in light intensity rather than total change, a condition which permits maximum accuracy as well as placing no top speed limitations on the yarn being inspected.

Varying field requirements make it necessary that the unit be calibrated at the mill for the particular use intended. Calibration is an extremely simple procedure, consisting of experimentally determining which setting permits faults not considered significant to go through, while a count or stop motion is used on those beyond the allowable range.

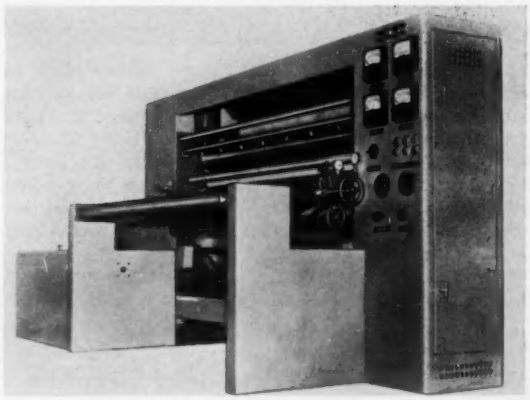
Lindly & Co., Inc., 248 Herricks Rd., Mineola, N. Y.

Do you want more data? Write ◆ or use card on page 197; list E-101

New Compacting Machine Provides New Fabric Effects Plus Shrinkproofing

Now a wide range of special effects can be produced—through new compacting methods which enhance the basic structure of goods and at the same time shrinkproof to commercial standards or better.

The Riggs & Lombard machine, designed to practice



the new methods, transforms woven and non-woven fabrics and yarns of many types by mechanical methods. Nubby fabrics look nubbier, patterned weaves are accentuated with depth dimension added; and possibilities

for further developments are practically unlimited. Yarns come up much loftier, for use in new and superior yarn-dyed fabrics.

This compacting machine handles a wide range of weights and types from very light to heavy fabrics such as carpeting, and a variety of yarn counts consisting of any fiber or blend.

Needing minimum floor space, it can be synchronized for in-line production at relatively high speeds. Machine adjustments are simple, and control of the degree of compacting is achieved by suitable variable speed units. Only connections to power, water, and waste lines are needed for operation of the process.

Processing on this machine eliminates the necessity for the sponging operation before tailoring on wool, worsted, blended fabrics; also achieves fine felting effects on worsteds and synthetic fabrics.

Riggs & Lombard collaborated in development of this machine and are sole manufacturers and distributors of this machine under licenses from the originators, Fabric Research Laboratories, Inc.

Riggs & Lombard, Inc., Foot of Suffolk St., Lowell, Mass.

Do you want more data? Write ◂ or use card on page 197; list E-104

Electronic Fiber Fineness Indicator

The machine for automatically measuring wool fiber fineness which was described on page 185 of TEXTILE INDUSTRIES for March, 1956, is pictured in the accompanying photo.

Called the EFFI Fiber Grader, Model 1000, it is a desk-

size machine which rapidly scans the diameters of fibers contained on a sample slide, then computes the average diameter of the sample and the percentage of fibers whose diameters are within standard U.S.D.A. distribution groups. Answers appear on direct-reading counters.

Used for wool top determinations and wool blending control, the machine is operated by one semi-skilled technician, and as many as 20 complete determinations per hour can be made.

Fiber Research Corp., 470 Atlantic Ave., Boston, Mass.

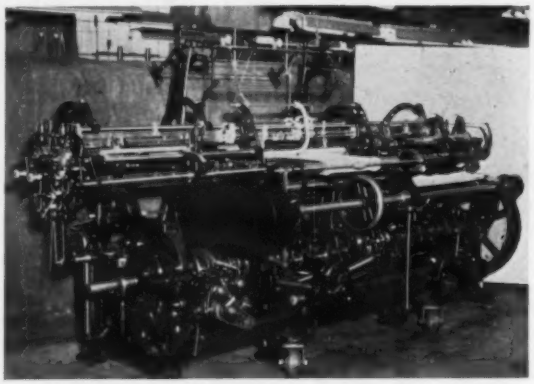
Do you want more data? Write ◂ or use card on page 197; list E-105

Make Sample Full-Fashioned Sweaters on this Single Head Machine

A single head full-fashioned sweater knitting machine is available for making samples.

Designed to save production time and to achieve greater accuracy in production of samples without utilizing regular production machinery, the new single head machine can make fronts and backs or two sleeves.

It has a 32" head and is ordinarily manufactured in 21 gauge with other gauges available to specifications. Featured is a specially designed friction drive for yarn



carriers which is chain and belt driven, a coulier motion of gears and racks instead of the conventional levers, and a half speed shock absorber which slows the carrier to half speed well before it hits the end stop.

The machine has a variable-speed motor and can run at speeds ranging from 10 to 50 courses a minute.

Attachments include a V-neck and a center line attachment. The machine is also equipped with filler points.

United Knitting Machine Co., 8th & Maple Sts., Lansdale, Pa.

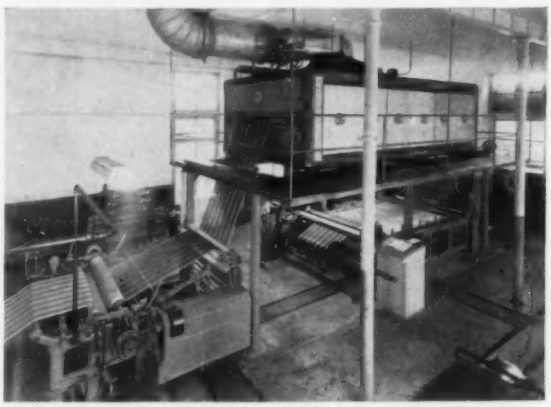
Do you want more data? Write ◂ or use card on page 197; list E-106

Compact Slasher Offers High Output and One-Man Operation

Some of the advantages to be derived by using the Ruti sizing machine, Model LSMA, with Artos parallel jet dryer, are:

1. Space required for the sizing operation is about 30% less.

2. Efficient operation with only one man is possible. Operator stands in front of the beaming device and



watches the beaming process, and at the same time has the drying section in front of him and sees the sized warp coming out of the dryer overhead. To observe the warp yarns as they enter the size box and dryer, he need not move from his position in front of the beamer; all he has

to do is turn around. At six places on the machine are push-button switches for "stop, go, and crawl" speeds. The operator is never more than a few steps away from a control station.

3. High production. A combination of alternating, vertical, and tangential air movement is utilized in the dryer. From a number of nozzles the powerful drying mixture of steam and air strikes the warp at a comparatively low rate of flow, and the warp shed is carried through the dryer in an air cushion without being touched. Thus, low tension and, in turn, minimum stretching of the warp (less than 1%) are the result. A high degree of elasticity of the warp is maintained.

4. Warps weave well. The smooth run of the warp through the dryer and the feature of the machine for avoiding a formation of channels (ribbons) contribute to this.

5. Quality of drying is very high because of the gentle air conditioning effect achieved by working with medium steam content.

6. Low consumption of steam and electricity combined with high production assure economic operation of the machine.

Warp yarns to be sized are fed in the usual manner from section beams on a creel behind the size box, pass through the size box and enter a wet warp splitting section. From here the warp sheet passes almost vertically upward to the drying chamber through which it travels as a single horizontal sheet. Emerging from the drying chamber, the warp passes downward and doubles back on its previous path underneath the drying chamber. Dried ends are separated by a series of split rods, are drawn forward by the take-up rolls, and wound onto the loom beam.

The shortest drying chamber available is 4.95 yards long. Others 6.6 yards and 8.25 yards long are available for proportionately greater production. The chamber can also be arranged in the conventional manner—on the floor between the size box and headstock—when low ceilings prevent the overhead arrangement.

Ruti Machinery Works, Ltd., Ruti (Canton of Zurich), Switzerland.

Do you want more data? Write ◆ or use card on page 197; list E-102

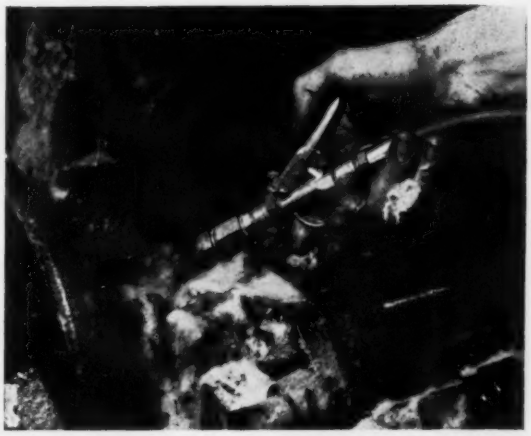
Non-Rusting Equipment Cleaner Makes Lint Fall Directly to Floor

"Lintgo" is the name of a very highly concentrated, non-rusting, neutral liquid chemical especially compounded to wet and make heavy the lint which clings to textile machinery in order that the lint may be readily removed by blowing it off with compressed air; at the same time it protects the machinery from rusting and prevents the lint from blowing throughout the remaining adjacent area—that is, the lint drops to the floor rather than spreading throughout the rest of the working area.

Other advantages of this detergent are:

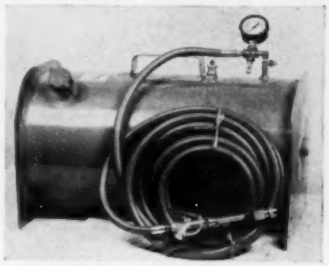
1. Removes the light oil film which makes the lint cling to the machinery, yet lubricating greases and oils are left on gears and other moving parts requiring lubrication when they are cleaned with Lintgo;
2. Has no odor and is non-irritating to eyes, nose, skin, etc., is not toxic, and is non-flammable;
3. Does not stain stock in process;
4. Harmless to paint and varnish;
5. Economical to use and easy to apply;
6. Improves working conditions.

To use this detergent, simply dilute it with tap water (9 parts water to 1 part Lintgo is recommended) and



Spraying "Lintgo" on a loom for quick and easy cleaning with compressed air.

spray it onto looms, spinning frames, winders, or other equipment to be cleaned with one of two types of handy dispensers specially designed for the purpose: (1) a 5-gallon capacity spray tank fitted with 25 feet of hose and quick-action on-off squeeze grip spray nozzle; and (2) a spray gun for use on mill compressed air hose, equipped with one-quart capacity cup for detergent or syphon hose for insertion in larger container on floor.

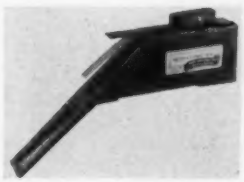


Handy spray tank for applying "Lintgo."

One quart of the solution will clean one loom. With the 5-gallon spray tank full of solution, 20 looms can be cleaned.

Lester Laboratories, Inc., P. O. Box 4897, Atlanta 2, Ga.

Do you want more data? Write ◆ or use card on page 197; list E-103



Improved Fabric Stiffness Tester

An improved model of the Drape-Flex Stiffness Tester, the instrument developed for the U. S. Navy Clothing Supply Office which measures how a material drapes under its own weight and how stiff it feels when flexed, is now available. It conforms to the requirements of the new ASTM method D-1388-55T for testing the stiffness of fabrics.

The standard angle of inclination has been changed from 43° to 41½° in accordance with British standards. A levelness indicator has been incorporated in the unit, and suitable means have been provided for adjustment. In addition, a new reversible scale permits reading test results in either inches or centimeters.

Fabrics of all types can be tested on the instrument—from very soft knit goods to stiffest duck. How stiffness changes with variations in fiber, blend, yarn, structure, tightness, processing, resin treatment, laundering, etc., can be determined with it. Felt, non-woven fabrics, coated

Let
SHAMROCKS
help you

INCREASE TEXTILE PRODUCTION
Save time and money

No. 12
SHAMROCK
DOFF
BASKET

Photo shows No. 12 leather reinforced Doff Baskets in use at a large Southern textile mill. Baskets are loaded with yarn that is being dumped into spooler.

Every hour you save with Shamrocks means another hour of production! That's why sturdy Shamrock Baskets . . . preferred in textile plants everywhere . . . pay for themselves many times through their long service life. The No. 12 Shamrock Doff Basket is "built to take the knocks", from its leather-reinforced canvas body to its smooth hardwood runners. Let a Shamrock representative survey your plant and recommend the right Shamrock styles for your particular needs! Manufactured by MEESE, INC., Madison, Indiana.

SALES OFFICES: NEW YORK—F. R. Tyroler, 55 West 42nd St., PE 6-0615; ATLANTA—W. E. Petway, 2577 East Dansley Dr., North Decatur, Ga., ME 4-4011; FORT WORTH—V. M. Hooton, 4220 Normandy Road, Tel. Jefferson 6-6564; WEST COAST—Petersen-Daniels, Inc., 3311 Beverly Blvd., Montebello, Calif., RAymond 3-7003. Export Mgr.—R. A. Auerbach, Easton, Pa. Cable Address: "Natly."

SHAMROCK
CANVAS BASKETS • HAMPERS • TRUCKS

fabrics, and plastic film may also be tested with the instrument.

Fabric Development Tests, P. O. Box 45, Brooklyn 32, N. Y.

Do you want more data? Write ◂ or use card on page 197; list E-107

Delustered Nylon Staple for Floor Coverings

A delustered form of Industrial Rayon's nylon staple fiber for floor covering use is available.

The new nylon fiber offers opportunities for flexible designing in line with current style trends. Industry technologists and designers will be able to use the fiber in combinations to achieve tone-on-tone effects.

It is anticipated that many new and interesting variations may be developed, not only by combining lusters but also by varying twist of yarns made from a dull staple in combination with yarns made from this producer's standard bright nylon staple.

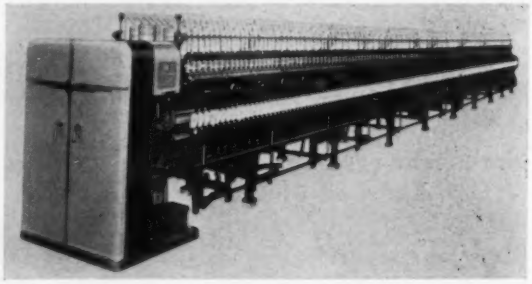
The new delustered fiber is being offered in 8 denier and 15 denier.

Industrial Rayon Corp., Union Commerce Bldg., Cleveland 14, Ohio.

Do you want more data? Write ◂ or use card on page 197; list E-108

Improved Sliver-to-Yarn Spinner Available with 2½" Rings

Both the roving-to-yarn (Model OM-K) and the sliver-to-yarn (Model OM-S) spinning frames produced by the O-M Spinning Machine Mfg. Co., Ltd., Osaka, Japan (described in TI for July, 1955, pp. 145-146), are being built with 2½" rings and 10" lifts with the addition of



moving anti-balloon rings controlled by an independent lifting mechanism. In the larger gauge, the frame now accommodates 6½" sliver cans which hold about three pounds of sliver.

Other recent improvements are an automatic one-shot lubrication system for all head-end bearings, electric stop motions on doors and gear covers, ball bearing top rollers and apron rolls, magnetic cylinder brake, automatic yardage knock-off motion.

Edward S. Rudnick, Olympia Bldg., New Bedford, Mass.

Do you want more data? Write ◂ or use card on page 197; list E-109

Durable Water Repellent

"Norane Silicone," a concentrated emulsion of silicone resin, is designed to produce a durable water repellent and non-oily spot and stain resistant finish on acetate,

viscose, cotton, nylon, and wool fabrics.

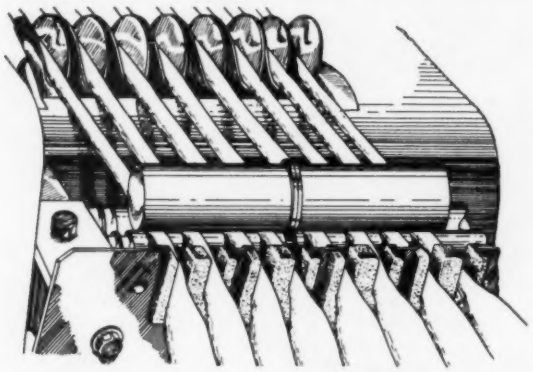
Fabrics treated with it will not only show improved properties of abrasion resistance, tear strength, and sewability but will also hold their press, resist wrinkling, and stay new looking longer with less care. In addition, "Norane Silicone" is compatible with thermosetting resins for durable water repellent, crease resistant, and shrinkage control finishes.

Warwick Chemical Co., Div. of Sun Chemical Corp., Long Island City, N. Y.

Do you want more data? Write ☛ or use card on page 197; list E-110

Two-Piece Lifting Rolls Present Slivers More Directly to Spoons

Two-piece top lifting roll units for all models of can-back drawing frames have been designed for use by mills processing combed stock in particular and wishing to



minimize sliver variation. They can be used in conjunction with the extended creel.

With the new, more compact top lifting rolls, the slivers present themselves to the spoons from behind in an almost direct line, without the use of finger guides, so that side pressures against the finger guides and the spoons are eliminated.

A group of eight slivers occupies only 9" of space laterally at each new top lifting roll unit, leading directly to eight spoons in a standard spoon assembly, which in turn requires a space not quite 7" wide.

For mills running six ends up, a 6-sliver lifting roll set-up is arranged for by merely not using a sliver location at each end of the lifting roll units. Or shorter 6-sliver top lifting rolls can be provided. Again, an almost direct line of pull through and over the spoons is obtained.

Saco-Lowell Shops, 60 Batterymarch St., Boston, Mass.

Do you want more data? Write ☛ or use card on page 197; list E-111

Prevent Formation of Scum and Dirt in Peroxide Bleaching of Cotton Goods

Staining and resist spots often caused by the redeposition of dirt and insoluble materials on cotton goods during continuous peroxide bleaching can be effectively combatted through the use of Barisol BRM.

The high dispersal powers of this phosphated compound prevent the formation of scum and dirt in both the caustic and peroxide saturator.

As little as 0.25 to 0.5% of Barisol BRM on the weight of the liquor in the caustic saturator not only speeds up

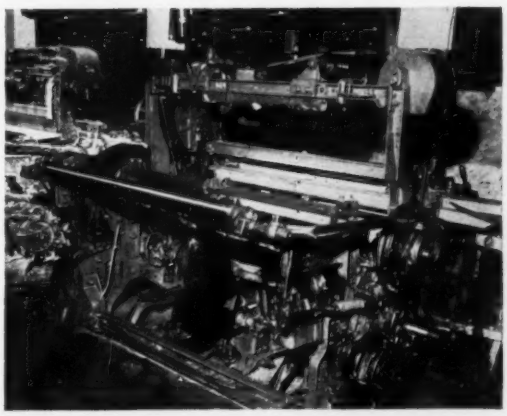
SECONDS

Caused by Lint and Oil

NO LONGER NECESSARY

New Help For Lint-Clogged Machinery

SPRAY ON LINTGO—BLOW DOWN LINT DROPS TO THE FLOOR



LEAVES MACHINERY CLEAN AND LINT-FREE. LINT DOESN'T SWIRL INTO THE AIR.

If you have lint-clogged looms; greasy, linty ring-rails and winder cams; drive cylinders that are so greasy your tapes slip constantly; or any one of countless other lint or grease problems, you will find LINTGO a life-saver!

LINTGO reduces slubs, seconds, and improves quality. It is non-corrosive, odorless, non-flammable, fumeless, non-toxic and inhibits rust. It can and will solve your lint problems quickly, easily, economically and without hazard. Send for technical literature explaining properties, methods of application, etc., today, using the handy postage-paid return card on page 197!

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STEAM INJECTION
a very
SATISFACTORY
PERFORMANCE
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mills . . .
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PICK GIVES YOU
MAXIMUM EFFICIENCY
Water is heated INSTANTLY by steam injection. Fuel savings are high because there is no waste — water is heated only as used.
Pick Heaters maintain continuous flow at preset temperature for bleaching, dyeing, scouring, etc.
Safe, Quiet Operation. Exclusive "Pressurizer Piston" assures maximum safety and eliminates hammer noise and vibration on continuous or "start and stop" loads.
No storage tanks required. Can be installed in corners, on walls and overhead. Saves valuable floor space.
Installation is simple and inexpensive . . . only ordinary pipe connections are required.
PICK MANUFACTURING CO. WEST BEND, WISCONSIN

the action of the caustic on the goods but helps to bring about a more thorough removal of foreign material in the subsequent washing operation.

In the peroxide saturator, 0.1 to 0.5% of Barisol BRM will insure penetration and maximum reaction of the peroxide with the coloring matter in the goods. The accumulation of insoluble silicates and phosphates on equipment in this phase of the operation is prevented when the product is utilized.

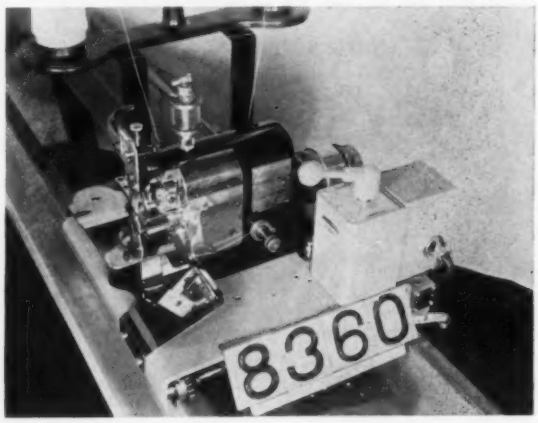
Dexter Chemical Corp., 819 Edgewater Rd., New York 59, N. Y.

Do you want more data? Write ◂ or use card on page 197; list E-112

Railway Sewing Machine Offers Advantages of More Production, Less Maintenance

Designed to increase production and reduce maintenance is the Curtis & Marble Model LC railway sewing machine. Either the chain stitch or butted seam sewing head can be supplied.

The Model LC incorporates modern design with high



speed, simplified operation. A single hand lever controls the sewing cycle.

The operator places the cloth on the holders and with the sewing head at the extreme left, he throws the lever to forward. The head will not start sewing until the needle is at the selvage. At the end of the seam, the head automatically stops and after removing the cloth from the holders, the operator throws the lever to reverse and the head returns to its starting position ready for the next seam.

The machine provides for a clear view across the head, with the motor and drives placed underneath.

Micro switches positioned at the back of the machine provide adjusting points to handle various widths of cloth and still retain all the automatic features.

Curtis & Marble Machine Co., 72 Cambridge St., Worcester, Mass.

Do you want more data? Write ◂ or use card on page 197; list E-113

Textile Finish Keeps Cloth Sterile

A new, permanent chemical finish for textiles, that will kill disease-bearing and odor-causing bacteria coming into contact with the fabric, has been developed.

Marketed under the trade name "Eversan," the new

finish can be applied by incorporating it in bleaches, dyes, inks or resins without any addition to current processing cycles. It is non-toxic and non-irritating.

Exhaustive tests under laboratory and commercial manufacturing conditions reveal the new process is as long-lasting as the fabric treated, irrespective of the number of washings to which the cloth is subjected.

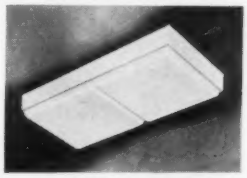
Tests have shown that Eversan-treated fabrics, soaked in highly contaminated solutions, will return to 99% + sterility within four hours after removal from contamination, without washings or attention of any kind.

Yardney Chemix Corp., 44 Leonard St., New York 13, N. Y.

Do you want more data? Write ☁ or use card on page 197; list E-114

Fluorescent Unit Provides Natural Light Accuracy for Color Work

"Color Matcher," a new fluorescent lighting unit that provides the equivalent of natural light entering a north skylight at high noon, has been announced.



Designed to provide light of 7500 degrees Kelvin temperature for exacting comparison of colors, the unit uses a mixture of six 40-watt fluorescent lamps comprised of four Super Deluxe 45 and two standard Blue in a Plexiglas and steel fixture.

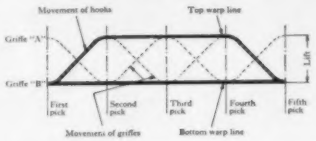
Field tests have verified its uniform and accurate color rendition throughout the entire spectrum, from blue through green and yellow to red. It also produces strong illumination at working levels—over 75 foot-candles—for optimum visibility.

Duro-Test Corp., North Bergen, N. J.

Do you want more data? Write ☁ or use card on page 197; list E-115

Open-Shed, Double-Lift, Double-Cylinder Jacquard

Recently introduced was the Dracup double-lift, double-cylinder Jacquard head of the open-shed type—in other words, the warp shed is always completely open. The warp ends remain stationary in the top and bottom position and change only as selected by the pattern cards. That is, a hook remains "down" for as many successive picks or "up" for as many successive picks as each particular design requires.



Principal advantages to be derived from this open shed Jacquard are:

1. Higher operating speeds—loom speeds ranging from 180 to 200 picks per minute are obtainable.

2. Harness life is at least doubled, and the effective life of the machine is considerably increased due to the fact that there are fewer moving parts; less power is

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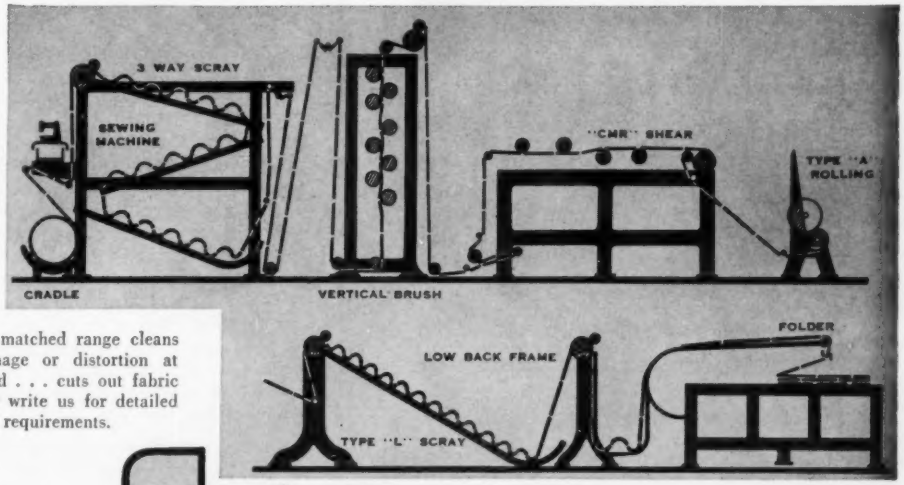
THIS new C & M completely synchronized *Large Economy Package* for one man operation gives you *more* for your equipment and labor dollar. Sewing Machine, Scray, Brusher, Shear and Rolling Heads are individually tailored by C & M engineers for your own grey goods mill. At "less than unit" initial cost, this perfectly matched range cleans your fabrics without damage or distortion at maximum operational speed . . . cuts out fabric waste. Plan now to call or write us for detailed information to fit your own requirements.



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Get the most out of your desizing agent!

DESIZE WITH EXSIZE-T

★ EASY TO USE!
★ RELIABLE!
★ ECONOMICAL!
★ SAFE!

Here is an easy-to-use, economical desizing agent which is absolutely safe on all fabrics . . . a quick and complete starch digester . . . always dependable.

So, if you need a reliable, efficient agent for preparation of cloth prior to bleaching, dyeing, printing and special finishing, it's to *your* advantage to investigate Exsize-T!

For more information, write to

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Merchandise Mart
Chicago 54, Illinois

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required to drive the Jacquard head.

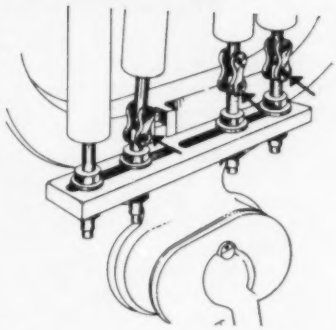
3. Tie fabrics and others that normally are woven face down because of the exceptionally heavy lift on the griffe, can be woven face upwards and still have only the same amount of lift as when woven face down.

The manufacturer emphasized that for the present only the double cylinder type head is available but it is anticipated that a single cylinder model will be announced later.

Samuel Dracup & Sons Ltd., Lane Close Mills, Great Horton, Bradford 7, England.

Do you want more data? Write ◂ or use card on page 197; list E-116

New Spring Weighting Simplifies Drawing Frame Roll Changes



New-type spring weighting units with connecting links are now available for Saco-Lowell Model DS-24 and DS-44 drawing frames. They allow changes in roll settings to be made without having to loosen the lock nuts and reposition the spring rods in the slots of the weight-relieving saddles underneath the beam. At widest settings they eliminate all back weight-hook interference at the rear of the roller beam slot.

Faster roll changes are made with the new system. Weights are relieved or re-applied instantly when rolls are being set, and before or after weekends.

Other time-saving advantages of the improved assembly are:

1. The underside of the drawing frame is freed from the mass of dead weighting which always accumulates dust and lint, and which must be brushed down periodically.

2. No physical effort need be expended by the frame operator or fixer, nor time lost, to make proper adjustment of weight hooks on the top roll bushings.

3. When needed, interchangeable spring cartridges can be substituted easily and quickly. Available spring pressure assemblies with connecting links for DS-24 and DS-44 frames are, so far, limited to 60, 80, and 120 lb units. Other weights will be provided on demand.

When making a roll-setting change with the improved weighting as part of the drawing frame, it is only necessary to make sure, after the rolls have been re-set, that the reference mark on each spring rod is at its correct position at the bottom of the spring case.

Saco-Lowell Shops, 60 Batterymarch St., Boston, Mass.

Do you want more data? Write ◂ or use card on page 197; list E-117

Nylon Dispersion Useful on Textiles

"Genton" 110, a dispersion of Du Pont's "Zytel" 61 nylon resin in water, may be used as a finishing, bonding, or strengthening agent for threads, yarns, and all types of woven and non-woven fabrics. Films produced from it are tough, flexible, non-tacky, and clear.

The absence of flammable solvents permits continuous

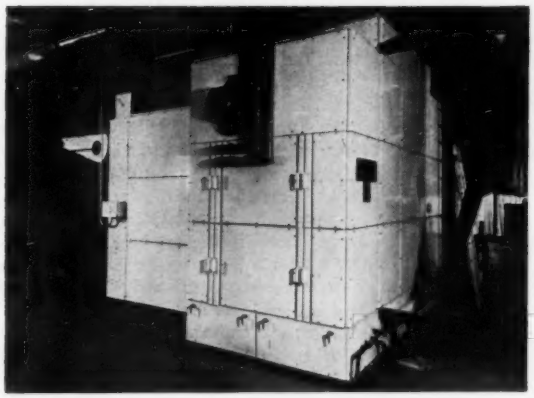
operation. High loadings may be obtained by multiple application. Excellent adhesion of the resin to the thread or fabric is obtained. The resulting products have excellent flex life, abrasion resistance, and improved hand.

Genton 110 may be used in coating nylon, rayon, cotton, as well as other synthetic and natural fibers, resulting in greater resistance to oxygen and hydrocarbons. It is applicable as a coating for cordage such as fishing lines and fishing nets; also as an adhesive and bonding agent for tufted carpets.

General Dispersions, Inc., 165 Third Ave., Paterson, N. J.

Do you want more data? Write or use card on page 197; list E-118

Machine Cures Resin Finishes Faster and More Economically



The Spooner Polymerizing Machine for curing resin-finished fabrics is designed on the premise that it is the temperature of the fabric, not the atmosphere to which it is subjected, that is important. It is a two-compartment machine, the first of which is utilized for economically raising the temperature of the fabric to that required for polymerization and the second a baking chamber capable of maintaining the temperature for complete polymerization of the resin finish being applied.

Advantages of this arrangement are: less time is required to increase temperature of the fabric to the point where polymerization begins; capacity of baking chamber is less; migration of resin is reduced to minimum because of the short time required for onset of polymerization; treatment of fabrics is constant, regardless of the weight of the piece and how much moisture it contains, making it easy to determine by experiment exactly what exposure time is required; no difficulty is encountered once the linear speed of the machine has been adjusted to give the required exposure time—operation of machine is then automatic.

The single, high efficiency drying and pre-heating chamber, in front of the baking chamber proper, is constructed so that the pre-dryer forms the first vertical pass. The cloth then enters a semi-static or baking chamber with rollers at top and bottom.

To insure absolutely uniform treatment of the cloth in the baking chamber, the Spooner system of nozzles is applied with the nozzles running across the width of the machine and located on the floor. Even heat distribution is obtained, the streams of air being blown up the face of the cloth. Efficient insulation insures economical operation by reducing heat losses to a minimum. Normally

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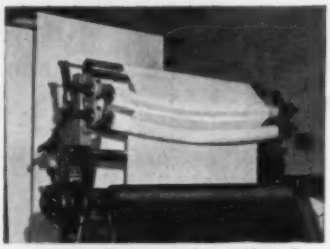
SLACK SELVAGE ELIMINATOR

reduces shearing spoilage



Control slack selvages and wrinkles in your shearing operations with a Mount Hope System of Slack Selvage Eliminators. Avoid costly slowdowns and eliminate spoilage due to slack selvages and wrinkles. Save these lost profits by increasing your Cloth Room production.

Have your plant surveyed by a Mount Hope Production Cost Engineer. Write for free Bulletin SSE.

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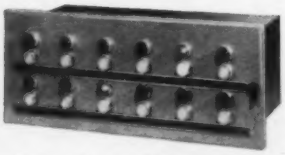
Southern Repair Shop—Charlotte
Originator of Modern Expanders — Leader in Cloth Handling Equipment

Panalarm Annunciator Systems Detect Off-Normal Conditions For Immediate Corrective Action



In any process, or on automatic or semi-automatic machinery, the immediate correction of off-normal conditions can greatly reduce rejects. Panalarm Annunciator Systems are modern working tools permitting closer equipment control by operating personnel.

The Panalarm Annunciator is a coordinated, multiple-unit signal system that provides instantaneous detection of off-normals at predetermined control points. Alerting signals are both visual (illuminated windows or bullseyes) and audible (horns, bells, etc.). Modular component design and circuit flexibility permit systems to be engineered to your specific requirements and allow simple modification for future needs.

Dependable operation of the Panalarm Annunciator System is assured by heavy-duty, instrument-type construction throughout. Complete pre-wiring permits easy installation. Write for Bulletin 100A.

PANALARM DIV., PANELLIT, INC.

7513 North Hamlin Avenue • Skokie, Illinois
Panellit of Canada Ltd., Toronto 14

the baking chamber is heated by either gas or electricity to permit the high temperatures usually employed to be obtained.

A further advantage of the pre-drying and heating pass is that this section of the machine may be heated by steam, thus the power required to increase the temperature of the fabric may utilize what is probably the cheapest source of power available.

Spooner Machinery (Canada) Ltd., 2681 Bloor St., West, Toronto 18, Ontario, Canada.

Do you want more data? Write ◂ or use card on page 197; list E-119

Dry Sequestrant Is Non-Hygroscopic

An improved dry form of Perma Kleer 80, called Perma Kleer 80 Crystals, is non-hygroscopic and is suitable for dry mixtures.

Caking during storage, picking up moisture on exposure to humid atmosphere, or causing mixtures of powdered soaps or detergents to become hygroscopic where a sequestrant is incorporated, are eliminated when this product is used.

Because of the purification which takes place during the process of crystallization, the content of active chelating agent is very high. This is beneficial to the consumer as evidenced by greater chelating efficiency, non-varying pH because excesses of sodium ion are eliminated, and stable assay because sodium ion, acid, and water content are held in exact ratios by the crystalline structure.

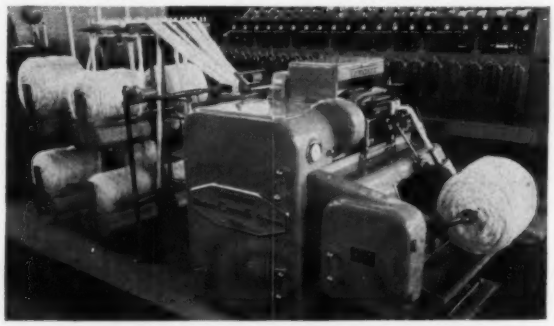
This product forms stable chelates with all divalent metal ions and most trivalent metal ions. Ferric ion is chelated in acid and neutral media.

Refined Products Corp., Lyndhurst, N. J.

Do you want more data? Write ◂ or use card on page 197; list E-120

Versatile Machine for Worsted System Mills

A more uniform sliver is produced at higher speeds by the Tematex Super Intersector for natural and synthetic



fibers that are suitable for processing by the worsted system of yarn manufacture. The machine can be used for all combing and recombing operations and for the first three or four drawing operations in the French system as well as in the Bradford or American systems.

Available with one or two heads, delivery in one or two balls per head, and also with one or two slivers on each ball, the intersector can be equipped with can creel or ball creel, according to requirements. Can delivery is also available with one or two 15" x 36" cans per head.

Some of the features of the machine are:

1. Each head is capable of delivering sliver weighing

from 35 grains per yard to about 425 grains per yard.

2. 64 fallers per head; drops per minute—1365 maximum.

3. Delivery speed: at 1365 faller drops per minute—12.30 times the draft.

4. Head can be opened with no danger of faller screws getting out of time.

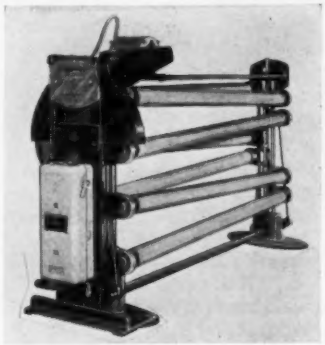
5. Three-roll draft system, ratch and pressure of which are easily adjusted.

6. Slivers follow a straight line from draft unit to ball on ball delivery machines.

Stellite American Corp., 60 East 42nd St., New York 17, N. Y.

Do you want more data? Write ◂ or use card on page 197; list E-121

Electro-Mechanical Weft Straightener May Be Remotely Controlled



The Durrant electro-mechanical weft straightener, which is adaptable to the entering end of most tenter frames, features push-button control for remote operation if desired and a special safety device that protects the electrical equipment from damage.

Manual handling of cloth by the tenter operative is eliminated. Because this weft straightener acts only on a 4' 6" length of cloth at one time, the cloth must enter the tenter straight and entirely free from slack edge, thus preventing clip or pin damage and insuring that the cloth is stretched fillingwise to give uniform width together with improved feeding. Also, any change in direction of weft distortion in the piece or at a seam is quickly corrected.

Particularly suitable for straightening crooked or distorted weft in woolens, worsteds, cottons, rayons, gabardines, twills, checks, etc., the machine does not produce stretch in the length of the fabric being processed.

R. J. Dealy & Sons, 263 Summer St., Boston 10, Mass.

Do you want more data? Write ◂ or use card on page 197; list E-122

Nylon Emulsion Bonding, Coating, and Finishing Agent for Textiles

A new nylon emulsion bonding, coating, and finishing agent is suitable for use in the textile industries. Manufactured from Type 8 nylon resin, under license from E. I. du Pont de Nemours & Co., this product is identified as BCI Nylon Dispersion. It may be applied by dip coating, by roller, or by spraying with either a heat sealable thermoplastic or thermoset finish as desired.

For non-woven fabrics, the product increases the strength and flexibility as well as improving their laundering and dry cleaning characteristics.

For woven or knitted fabrics, BCI Nylon Dispersion increases abrasion resistance and tensile strength. It is also permeable to moisture vapor for "breathing."

Belding Corticelli Industries, Inc., 350 Fifth Ave., New York 1, N. Y.

Do you want more data? Write ◂ or use card on page 197; list E-123

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Card Screens

GASTONIA standard type rib or perforated Card Screens are cut and assembled on specially designed precision-built jigs.

Maximum operating efficiency and utmost durability of these Card Screens is assured by thorough checks at various stages of manufacture. Scientific final inspection guarantees setting points within standard tolerance.

GASTONIA Card Screens, like all other GASTONIA Products, are precision-built from the finest materials by highly skilled workmen having many years of practical experience.

Gastonia TEXTILE SHEET METAL WORKS, INC.

Gastonia, North Carolina

A sheet metal works serving textile mills

CYLINDERS — Dynamically balanced for better performance—reduce vibration to an absolute minimum.

SCREENS — Picker, Condenser and Waste Machine Screens of maximum strength and durability.

ASPIRATORS — Precision manufacturing methods assure proper shape and balance of Aspirators and Aspirator Dampers.

LAP CONDUCTOR TINS
WASTE CHUTE COVERS
WASTE CHUTES
SLIVER PANS
BACK TINS

COMBER REEEDLING — Top Combs, Half Laps and Winder Guide Combs precision-rebuilt of top quality materials to manufacturer's standard specifications. Imported English needles of tempered high-tensile steel used exclusively.

...Stop Leakage!.....

use SEAMLEX ROTARY the Rotary Joint for Steam, Water, Oil, Air, etc.

For the admission of liquids or gases into revolving drums, calenders, dry cans, etc., SEAMLEX Rotary Joints ensure uninterrupted production, minimum power consumption and lowest maintenance.

Compact, light-weight SEAMLEX ROTARYS are designed to render long, continuous service, free from leakage.

External Screw Adjustment provides means to compensate for normal wear, without removal of joint from equipment. Floating Graphite Seal prevents excessive wear. Pressure Equalizing Chamber reduces power consumption.

Seamlex Rotarys are provided with Seamlex Quality Hose.

SEAMLEX COMPANY, INC.

Take advantage of SEAMLEX Company's many years of experience in design and manufacturing. Write today for FREE Bulletins 955 & 5500A.

41-23 24th ST., Dept. F
LONG ISLAND CITY 1, N. Y.

● *Since 1928, SEAMLEX Products are QUALITY Products.* ●

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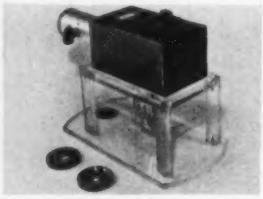


Model CS-66

The ELECTROSTATIC VOLTMETER (CS-66) was developed by the Institute of Textile Technology to detect and measure electrostatic charges on moving or stationary equipment or materials.

The ELECTRICAL RESISTANCE TESTER (CS-51) has been developed for measurement of electrical resistance of fabrics, fibers, film and other materials to determine the static propensities of the materials.

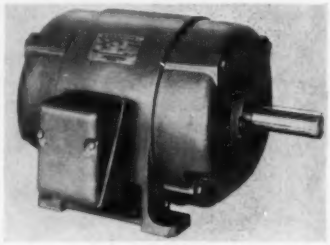
Model CS-51

FOLDERS AND PRICE UPON REQUEST.

CUSTOM SCIENTIFIC INSTRUMENTS
INCORPORATED
541 DEVON STREET KEARNY, N. J.

Equipment Briefs

New Synchronous Induction Motor. For general industrial use is a basically new synchronous motor, the "Synduction" motor, available in ratings from ¼ to 40 hp and built on standard induction motor frames and enclosures. It requires no brushes, slip rings or windings on the rotor, separate source of d-c excitation, or special starting equipment. Approaches efficiency and power factor of squirrel-cage units. Can be used effectively in these applications: (1) where motor must operate at a constant, unvarying speed; (2) where several motors must operate at a fixed ratio of speed of one to the other; (3) where the speed of a motor, or series of motors, must be adjustable over a speed range, with minimum variation at any speed setting.



Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Do you want more data? Write supplier or use card on page 197; list E-201

For Dyeing Light Fast Greens. Lanasyn Yellow 3GL Pat. is a new neutral dyeing, premetallized bright greenish yellow. It has particularly good fastness properties on nylon. Fastness to sunlight is also very high. For wool dyeing, Lanasyn Yellow 3GL Pat. shows a fastness rating of 6-7 Fade-Ometer tests.

Sandoz Chemical Works, Inc., 61 Van Dam St., New York 13, N. Y.

Do you want more data? Write supplier or use card on page 197; list E-202

Neutral Dyeing Wool Black. Cibalan Black BGL, a direct dyeing color, yields clean, neutral shades of gray and black on wool, nylon, and silk. Providing excellent fastness and level shades by dyeing, padding or printing, the dyestuff shows good affinity in neutral or slightly acid dyebath and requires no chroming, development or other aftertreatment. Light fastness on wool is especially good. Well suited for fashion shades in combination with other Cibalan dyes.

Ciba Co., Inc., 627 Greenwich St., New York 14, N. Y.

Do you want more data? Write supplier or use card on page 197; list E-203

Two-Position, Motor-Operated Valve. For steam, water, and gas applications is the new National two-position, motor-operated valve, Type HGV. Valve is globe pattern single seat with removable disc, and features unit type bonnet. Equipped with induction motor with squirrel cage rotor and oil immersed gear train, and snap-acting type switches designed for trouble-free service. Provision is made for manual operation in event of power failure. Valve may be mounted in any position desired. Parts requiring replacement are easily accessible.

National Controls, Inc., 400 Homer St., Newton Centre 59, Mass.

Do you want more data? Write supplier or use card on page 197; list E-204

Apple Green Solution-Dyed Rayon Staple. Production of a new apple green replacing the old color in the Coloray range of solution-dyed rayon staple has been announced. Withstood 500 hours of direct exposure or under glass in South Florida without significant fading. Has greater resistance to peroxide bleaching (now Class 5); is more resistant to perspiration (Class 5); and fastness to

drycleaning is improved (now Class 4).

Courtaulds (Ala.) Inc., 600 Fifth Ave., New York 20, N. Y.

Do you want more data? Write supplier or use card on page 197; list E-205

Timer Valves Control Flow Automatically. The flow of liquids, gas, or air can be controlled automatically with new timer valves which consist of a solenoid valve and a timer control sealed in a water-tight case. Valves turn the flow on or off at desired time intervals. Available in wide variety of timing cycles. Fit all standard pipes ⅜" and larger and operate on 110-volt or 220-volt, 60 cycle current.

Automatic Controls Corp., 2390 Winewood, Ann Arbor, Mich.

Do you want more data? Write supplier or use card on page 197; list E-206

For Centralized Lubrication. The new Norgen "Micro-Fog" Lubro-Control Unit automatically creates a finely divided air-borne oil fog which can be uniformly distributed through complex piping systems to multiple lubrication points. A single unit can completely lubricate even the largest machines—up to 1000 bearing-inches. Unit is small, compact, complete, measuring only 12" x 11" x 9". It contains all necessary controls plus a 2-gallon oil reservoir—enough oil for 12 hours lubrication at maximum output. Automatic alarm system is available to tell when air pressure fails, when excessive pressure develops in oil reservoir, or when oil supply needs replenishing.

C. A. Norgen Co., 3499 So. Elati, Englewood, Colorado.

Do you want more data? Write supplier or use card on page 197; list E-207

Gasoline-Powered Lift Trucks for Hazardous Locations. Yale & Towne gas-powered GS industrial lift trucks available in capacities ranging from 3,000 to 10,000 pounds have been approved by Underwriters Laboratories for use in hazardous locations listed in the code in parts of Class I, Division II; and Class II, Division II; and all of Class III, Division II. Approval covers all industrial sites where combustible fibers such as rayon, cotton, baled waste, etc., are stored or handled in places other than where actual manufacture is carried on.

The Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15, Pa.

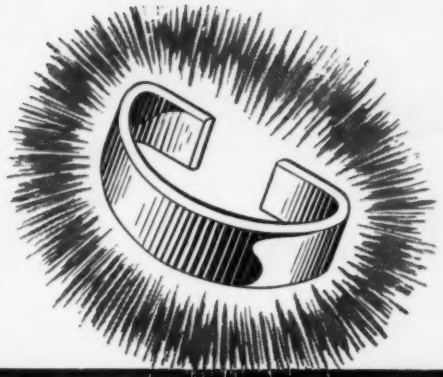
Do you want more data? Write supplier or use card on page 197; list E-208

Through-Shaft Magnetic Disc Brake. A new through-shaft magnetic brake incorporating the advantages of solenoid operation is called the HT-50 Through-Shaft. The unit is designed so that the motor shaft extends right through the center and out beyond the end of the brake, permitting drives off both ends of the shaft. The brake can be mounted on NEMA frames 56-C, 66-C, 182, and 184.

Stearns Magnetic, Inc., Milwaukee 46, Wis.

Do you want more data? Write supplier or use card on page 197; list E-209

Drum Handling Clamp for Easy Horizontal Placement. A new rotating drum handling attachment of 2000-pound capacity can serve a number of drum handling assignments and is particularly effective where quick horizontal placement or stacking is a materials handling requirement. The attachment's distinctive ability lies in the design of the rubber coated clamp arms. One arm is articulating and shaped with two concavities which fit the



DARY
Ring Travelers

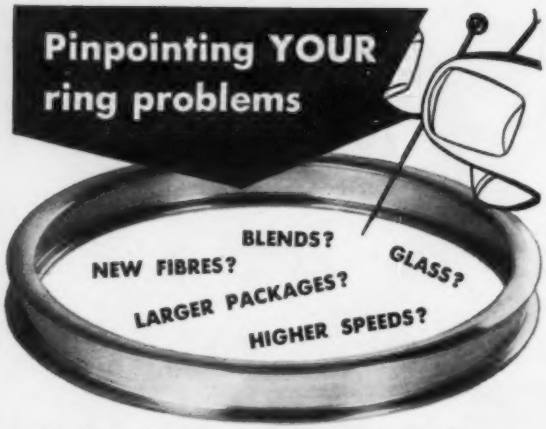
OUR SPECIALTY!

Our specialty is making Dary ring travelers—an item well and favorably known to the textile trade for more than half a century. Though times change, we at Dary hold to one course without deviation. We continue to serve, by pursuing our specialty.

When you need ring travelers, call on our experience to aid your choice. Consult your friendly Dary representative!

Always specify
DARY Ring Travelers

THE DARY RING TRAVELER CO.
TAUNTON, MASSACHUSETTS
LINDSEY I. PHILLIPS, TREASURER, TAUNTON, MASS.
JOHN H. O'NEILL, BOX 720, ATLANTA, GA.
JAMES H. CARVER, BOX 22, RUTHERFORDTON, N. C.
CRAWFORD "JACK" RHYMER, BOX 2261, GREENVILLE, S.C.



is the first step toward solving them ——— may we help?

Your ring problems are our business. Making the world's largest line of standard and lubricated rings . . . working closely with the traveler manufacturers . . . we can often suggest practical short cuts to the results you want.

WHITINSVILLE (MASS.) SPINNING RING CO.
DIAMOND FINISH
Makers of Spinning and Twister Rings since 1873

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TEXTILE PEOPLE WORKING *Safely and Efficiently* WITH ELECTRIC FEEDRAIL®

ELECTRIFICATION FOR MONORAIL SYSTEMS, CUTTING ROOMS, SEWING ROOMS, ETC.

Hundreds of textile manufacturers have chosen Feedrail for its safety and efficiency in distributing electric power to moving or stationary equipment. The modern Feedrail Trolley Busways eliminate the problems and troubles of open wiring, accidental contact, broken or frayed connections, long trailing cables, etc. – give you electric power where you want it, when you need it!

Feedrail's prefabricated overhead track sections and movable trolley outlets give your plant time and money-saving flexibility – easier rearrangement of sewing machines – faster, more accurate cutting operations – safer, more dependable power for monorail materials handling in your receiving, production, staging and shipping areas, etc.

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Never Becomes Obsolete

FEEDRAIL TROLLEY BUSWAYS
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Subsidiary of Russell & Stoll Company, Inc.
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shape of a drum. The other is flat surfaced and tapered slightly so that upon release of clamping pressure the drums will roll into position. The attachment rotates through a 90-degree arc to permit picking up drums in the vertical position and stacking them horizontally at a height dictated by the capacities of the Yale truck on which it is mounted. The new clamp can handle two drums in this manner. Used to pick up, transport, and stack drums vertically, the attachment can handle four drums at one time.

Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15, Pa.

Do you want more data? Write supplier or use card on page 197; list E-210

"Slant-Stitch" Sewing Machine. With a new decorative stitching machine, the Columbia Model 120 Slant-Stitch Machine, the stitches are formed at a slant, making a more decorative stitch which can add new interest and styling to many types of garments and accessories. Stitches are adjustable from 4 to 9 to the inch, at the touch of the stitch regulator. Ornamental effect can also be enhanced through the use of blending, contrasting, or ombre color threads. Rayon, silk, wool, cotton and metallic threads can be used. The machine is a one-thread machine, built into new high-speed Union Special 61400 heads.

Columbia Sewing Machine Corp., 315 West 35th Street, New York 1, N. Y.

Do you want more data? Write supplier or use card on page 197; list E-211

Hand Calculator. The "Curta" Hand Calculator is a precision instrument that adds, subtracts, multiplies, divides, and extracts square roots, much the same as the large desk model machines, but this calculator is small enough to be carried in one's pocket.

National Office Machine Co., 229 So. Wabash Ave., Chicago 4, Ill.

Do you want more data? Write supplier or use card on page 197; list E-212

40 Denier Nylon on Beams for Tricot Knitters. Commercial availability of 40 denier nylon yarn, both dull and semi-dull, on beams for tricot knitters has been announced. Tricot beams of 15 denier nylon yarn also will be available shortly. Beams are packed on metal shipping and storage racks, four beams to the package.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Do you want more data? Write supplier or use card on page 197; list E-213

Portable Electric Humidifier. A portable electric humidifier which uses up to three gallons of water per hour and puts 574 lb of moisture into the atmosphere every 24 hours has been developed.

Lake Erie Heating Corp., 138 West 7th St., Erie, Pa.

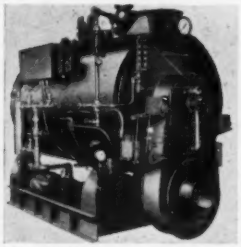
Do you want more data? Write supplier or use card on page 197; list E-214

No Base-Splitting with this Bobbin. To prevent base-splitting, the "Aluminox" base bobbin was developed. Covered with this metal, the bobbin base does not require the usual grooves and has long life. Bobbins with this special feature can be custom-designed for various needs.

The Vermont Spool & Bobbin Co., Burlington, Vermont.

Do you want more data? Write supplier or use card on page 197; list E-215

Compact Marine Steam Generator. A dry land adaptation of a Cyclotherm marine steam generator makes it possible to obtain 5000 pounds steam per hour from an over-all floor area 8′ x 7′. It is only 7′ high. This makes it possible to obtain 150 hp in less than half the space required for the average package steam generator. The boiler is designed to modulate over an extremely wide range with an exceptionally high efficiency. It is completely electronically controlled. With this unit, it is often possible to double boiler room output with no change in boiler room size. Also, it can often be squeezed into an existing boiler room without expensive installation charges.



Cyclotherm Div., National-U. S. Radiator Corp., Oswego 11, N. Y.

Do you want more data? Write supplier or use card on page 197; list E-216

Hardened and Ground Long-Round Parts. "60 Case" is the designation which has been given to a line of long, round, hardened bars recently introduced for use as guide rods, shafts, rolls, piston rods, axles, etc. Material is AISI 1060 steel which has a surface hardness close to 60 on the Rockwell C scale and is precision ground to standard diameters. Use of these bars permits big savings because warpage and subsequent straightening and grinding problems are eliminated. Standard sizes range from ¼" to 4" diameter, with length varying from 8′ to 14′ depending on diameter. Depth of hardness ranges from .040" minimum in the smallest diameter to .100" minimum in the largest diameter.

Thomson Industries, Inc., Manhasset, N. Y.

Do you want more data? Write supplier or use card on page 197; list E-217

Multi-Shape Hand Loom Makes Home and Fashion Accessories. The Dritz multi-shape loom was recently announced for weaving home and fashion accessories such as hand bags, place mats, stoles, hot plate mats, etc., using Dritz Loom-Yarns. Consists of 4 right angle pieces, 6 wide angle pieces, 6 extension pieces, 1 shuttle, 1 needle, and necessary wing bolts and screws. Squares can be made in 15 sizes ranging from 4½" to 15" across; many different sizes of rectangles can be made; as well as true and long or fancy shaped hexagons.

John Dritz & Sons, 115 Broadway at 25th St., New York 10, N. Y.

Do you want more data? Write supplier or use card on page 197; list E-218

Long Wearing Picker Teeth. For all types of picking applications are new picker teeth which will stand up much longer under hard usage, assuring textile mill management of lower maintenance cost by having shorter downtime between changes of cylinders.

Robert A. Main & Sons, Inc., 257 Pascack Rd., Paramus, N. J.

Do you want more data? Write supplier or use card on page 197; list E-219

Concentrated Window Cleaner. "Glitter" is the name of a new concentrated window cleaner which can be added to water to produce a solution that provides very satisfactory performance for large users of window cleaner. Also useful for glass blocks, glass doors, plastic fixtures and signs. Simply apply and wipe off to get "new glass brilliance."

The Selig Co., 336-350 Marietta St., N. W., Atlanta 1, Ga.

Do you want more data? Write supplier or use card on page 197; list E-220

NEW!

COTTON FIBER TREATMENT

UNO X-1 CONCENTRATE can be applied by spraying natural fibers or by treating raw stock fibers under pressure.

UNO X-1 CONCENTRATE reduces ends down per thousand spindle hours. Yarn strength is increased.

UNO X-1 CONCENTRATE prevents mildew, eliminates rust spots on yarn and material, decreases waste and helps make uniform yarn.

UNO X-1 CONCENTRATE causes considerable reduction of fly and is non-toxic and less flammable than regular mineral oil.

The improvement in yarn processing brought about by the use of UNO X-1 enables the yarn manufacturer to increase his production speed. This treatment may be used on virgin cotton and/or cotton waste, i.e., card strips or comber noils. It will eliminate static and will not load the cards.

UNO X-1 is diluted 4 to 1 with water which makes the finish price very low. Any conventional mineral oil pump may be used in spraying. Write for technical data sheet using the handy return card on page—— of this issue, or our representative will be glad to call on you.

CAN BE USED ON WOOL AND SYNTHETIC FIBERS, AS WELL AS BLENDS

UNIVERSAL

FIBER TREATMENTS, INC.

P. O. BOX 645 **MACON, GA.**

FULL WIDTH SAMPLES FROM A FEW POUNDS OF YARN . . .

Produced by the Callaway SAMPLE & RESEARCH SLASHER

A Small Versatile Slasher
Particularly Designed for
SAMPLES
TESTING
PILOT PLANTS
and RESEARCH

This new all-electric Callaway Slasher is a complete and efficient slashing unit designed particularly to fit the slashing requirements of mills which must prepare a lot of samples. It is also ideally suited for research, testing and pilot plant operations.

Using a minimum amount of yarn—cotton, synthetic, silk, wool or worsted—direct from individual packages, without warping or beaming, this little slasher is proving it can save space and money in slashing samples . . . Full-width samples without tying up a production slasher—and from less yarn.

From the stainless steel size box through the four 8" face electrically-heated drying cylinders to the head end, essential controls and adjustments are provided for all phases of operation. Speed can be regulated from five to forty yards per minute.

At reasonable initial cost and low operating expense, this new, versatile Slasher answers many small-run slashing problems.

We will be glad to furnish you with complete details without obligation.

WPF&M WARP PREPARATION MACHINERY
AIR-DRI SLASHERS
MULTI-CYLINDER SLASHERS
CYL-AIR SLASHERS
CALLAWAY SAMPLE SLASHERS
WPF&M HI-SPEED 4 CYLINDER SLASHERS
STANDARD 2 AND 3 CYLINDER SLASHERS

SLASHER MODERNIZATION EQUIPMENT
HI-SPEED HEAD ENDS
SPECIAL WIDTH HEAD ENDS
ADDITIONAL CYLINDERS
MULTI-MOTOR DRIVES
STRETCH CONTROL UNITS
EQUI-TENSION CREELS
TEMPERATURE, SPEED AND TENSION CONTROL DEVICES
SIZE BOXES, SIZE KETTLES, AND SIZE PUMPS
CORDUROY CUTTING MACHINES AND BRUSHERS

WEST POINT FOUNDRY & MACHINE CO.
WEST POINT, GEORGIA

Use this opportunity to keep abreast of new information dealing with machinery, equipment, supplies and services available to your mill.
To obtain more information on advertisements, print the name of the advertiser in the space provided on the card below.
Free booklets and more information on new equipment items may be had by entering their key numbers in the space designated for this use.
This service is made possible by the advertisers of TEXTILE INDUSTRIES as an aid to mill men who want to keep well informed on new developments in the industry. We cannot, however, extend this service to you unless you print or write legibly your name and position, the name of your firm, and its address on the card.
Four cards are provided in case others in your plant would like information . . . and TEXTILE INDUSTRIES pays the postman!

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NEW EQUIPMENT
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Please send, without obligation, additional information on New Equipment and booklets described (give Key numbers) .....

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Please send more information on advertisements (give Company Name)

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Company Name .....
Address .....
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INDUSTRIES...FILL IN AS DIRECTED AND DROP IN MAIL BOX!

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

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FIRST CLASS PERMIT NO. 582, SEC. 34.9, P. L. & R., ATLANTA, GA.

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HELPFUL BOOKLETS FREE!

5-1 CONTINUOUS RANGE CLOTH CARBONIZING. Bulletin gives technical requirements, commercial requirements and the exact operation complete with illustrations. For further information write James Hunter Machine Company, North Adams, Massachusetts.

5-2 HUNTER OPEN-WIDTH COMPARTMENT WASHER. Bulletin describes complete with illustrations this improved washer for all synthetics and cottons. Also lists specifications and shows how it greatly reduces maintenance and cleaning costs.

5-3 HUNTER DYEING EQUIPMENT. Describes fully with diagrams Hunter Model A Dye Becks, Hunter No/Lap Reels, Model S Dye Kettles, Open Width Dye Kettles, Sample Dye Kettles. Bulletin gives specifications of each, also shows actual installations of Hunter equipment. For further information write James Hunter Machine Co., North Adams, Mass.

5-4 HUNTER BAROTOR. Bulletin gives 19 reasons why the Hunter Barotor is the only machine that can give you complete satisfaction in dyeing all synthetics. Also tells of two actual installations at two leading mills. For further information write James Hunter Machine Co., North Adams, Mass.

5-5 HUNTER VAPO-JET. Bulletin gives illustration of the Exclusive Hunter Vapo-Jet. . . . Fastest, most efficient dryer ever made. Also gives size, production and the performance of this Vapo-Jet System. For further information write James Hunter Machine Company, North Adams, Massachusetts.

5-6 WHIRLAWAY EXPANDERS. Bulletin gives the outstanding features of the Whirlaway expanders giving pictures and the dimensions with description. Also list of parts with pictures of each part. For further information write Thomas Leyland Machinery Co., Inc., P. O. Box 24, Readville Station, Boston 37, Mass.

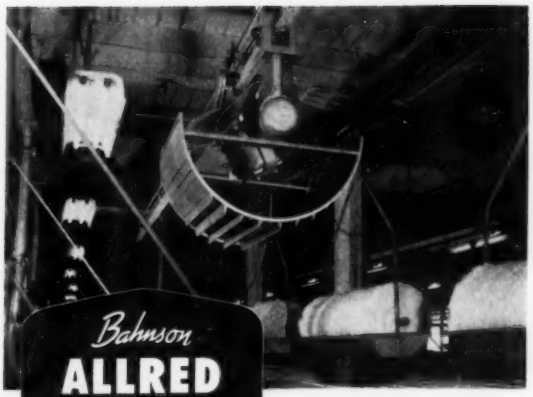
5-7 FLEX SPOOL. Bulletin gives the 9 outstanding features of this Flex Spool which solves all your textile spool problems. For further information write Thomas Leyland Machinery Co., Readville 37, Mass.

5-8 HOW BEECHCRAFT SAVES YOU TIME AND MONEY. Booklet available from Southern Airways Company shows how Beechcraft executive airplanes can save executives time and money. Write Southern Airways Co., Atlanta Airport, Atlanta, Ga.

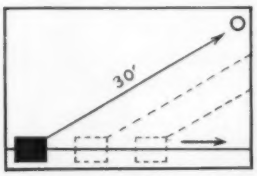
5-9 APPROVED FLOOR FINISHING PRODUCTS. Bulletin gives listings of 1956 MFMA laboratory tested and approved floor finishing products. The new listings include both the penetrating sealer and bakelite type floor finishing products. For further information write Research Department, Maple Flooring Manufacturers Association, 35 East Wacker Drive, Chicago 1, Illinois.

5-10 NORCROSS SIZEOMETER. Bulletin gives diagram and benefits of this completely automatic system for preparing sizing by cooking and mechanical agitation. Write The Norcross Corporation, 247 Newtonville Avenue, Newton 58, Mass.

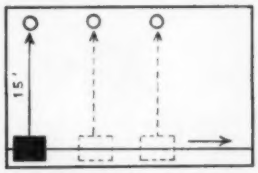
5-11 ELECTRIC INDICATING TEMPERATURE CONTROLLERS. Bulletin describes the Sarco LSI Electric Indicating Temperature Controller. Gives a simplified operational sketch which shows how this versatile LSI can be used to provide sequence control combinations. Write Sarco Company, Empire State Building, New York 1, N. Y.



Blows head-on at one-half the range of other cleaners . . . for better cleaning!



Other cleaners strike objective at angles from greater distances.



The Bahnson-Allred strikes objective directly at ½ the distance of other cleaners.

Blows Perpendicular to track to deliver direct, head-on air blasts. This special construction enables the Allred to clean more thoroughly with continuous head-on air blasts from ½ shorter range than other cleaners.

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11. "WHERE DID THEY HIT PAY DIRT?" — Booklet describes how many manufacturing concerns have come South and why they found it profitable. Gives industrial advantages of the Southeast. Write CENTRAL OF GEORGIA RAILWAY, Industrial Development Department, 501 Rhodes Haverty Bldg., Atlanta 3, Georgia.

15. NEW INDUSTRIAL FIBER — Technical bulletin now available on Fortisan-36, new industrial fiber by Celanese. Uses text, charts and diagrams to present technical properties, characteristics and recommendations for processing. — TEXTILE SALES DEPARTMENT, Celanese Corporation, Charlotte, N. C.

17.A FAIR DAY'S PAY AND IN RETURN A FAIR DAY'S WORK — 8-page booklet outlining the services offered to industry for the proper utilization of labor, material and equipment, and the resulting advantages for both labor and management. — AMERICAN ASSOCIATED CONSULTANTS, INC., 250 Park Ave., New York, N. Y.

18. RAYOON—MILE BY MILE — Color booklet describes how Industrial Rayon Corporation produces rayon mile by mile which is perfect inch by inch. — INDUSTRIAL RAYON CORP., Fifth Ave., New York 18, N. Y.

22. THE WONALANCET WAY — Is the title of an editorial booklet published five times a year and deal with current proolems which appear worthwhile at the time they are written. — WONALANCET COMPANY, 128 Burke St., Nashua, N. H.

23. TEXTILE STEELS — Six booklets are available from Atlantic Steel Company which will prove valuable to persons concerned with the purchase or use of steel. — ATLANTIC STEEL CO., P. O. Box 1714, Atlanta 1, Ga.

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116. STOP CORROSIOON — Details on speed Rex paint for metal wood and concrete maintenance solving condensation problems. — TRUSCON LABORATORIES, Box 69, Milwaukee Junction, P. O. Dept. T, Detroit 11, Mich.

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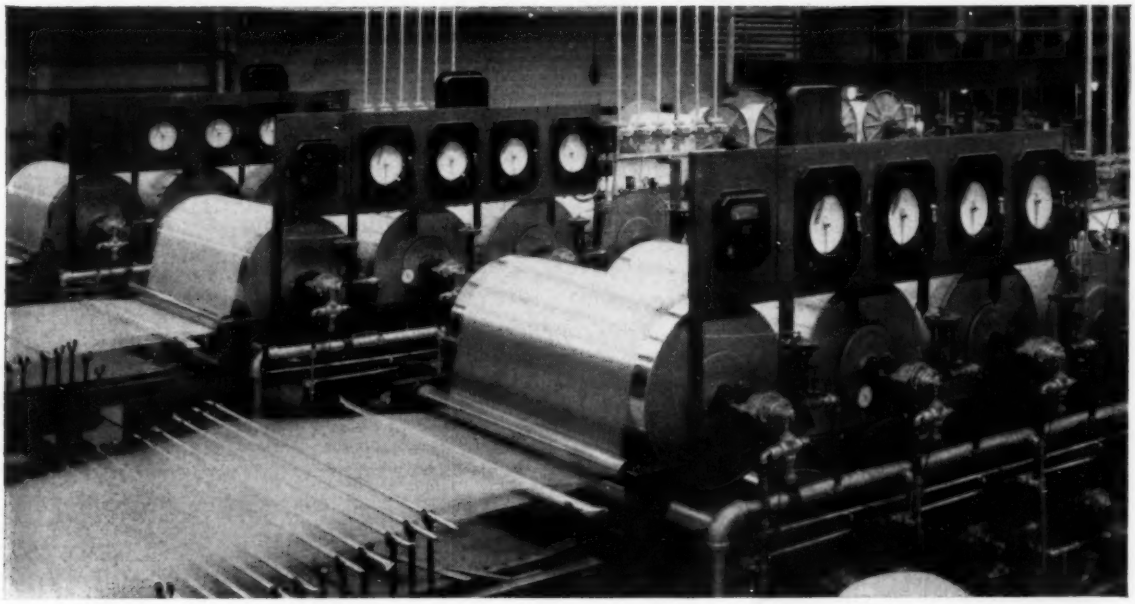

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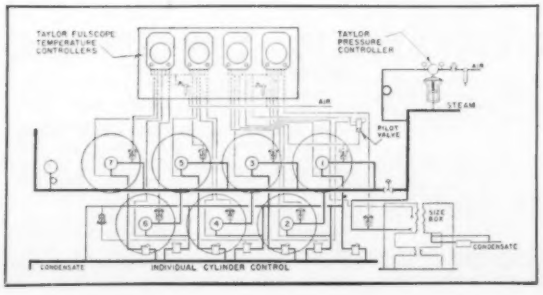

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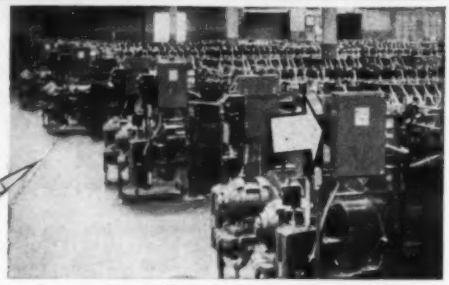

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213. LUBRICATION OF ELECTRIC MOTORS — Illustrated bulletin on lubricating and cleaning ball and roller bearings on electric motors. — NEW YORK & NEW JERSEY LUBRICANT COMPANY, 292 Madison Ave., New York 17, N. Y.

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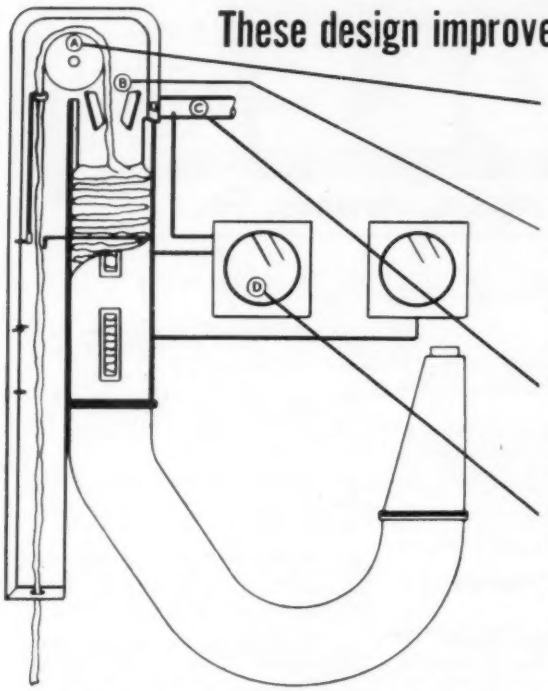

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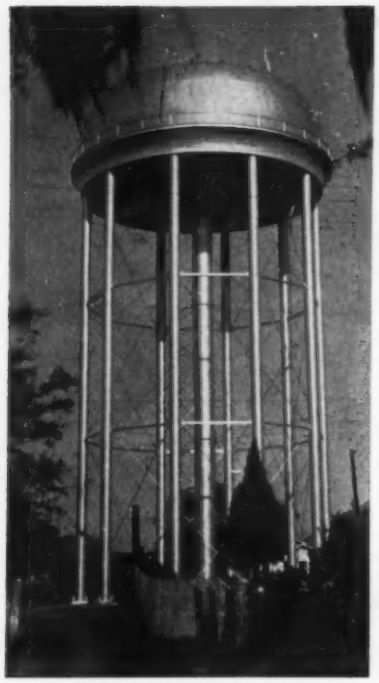

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310. HOW TO SELECT LIQUID METERS — Helpful free bulletin covers meters for brines, soap solutions, hot and cold water and other chemical solutions that can be handled by composition bronze meters. Write for bulletin 566UTI. — NEPTUNE METER CO., 19 W. 50th St., New York 20, N. Y.

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318. MOISTURE CONTROLLER AND INDICATORS — Literature available from Strandberg Engineering covers indicators for slashers, tenters, etc.; for direct connection to pickers, and automatic controllers for connection to same. — STRANDBERG ENGINEERING LABORATORIES, 416 W. Market St., Greensboro, N. C.

321. RED-RAY BURNERS — Bulletin describing use of Red-Ray Burners in preheating and partial drying to increase capacity of frame. — RED-RAY MFG. CO., 445 W. 45th St., New York, N. Y.

324. STROBOTAC — Informative reprint, "Strobotac Boosts Efficiency in Woolen and Synthetic Mills." — GENERAL RADIO CO., Cambridge 39, Mass.

337. COUNTING DEVICES — Catalog of Trumeter's complete line of counters for every application where counting, measuring or registering is required. Colored pictures illustrate each application. —TRUMETER COMPANY, 1265 Broadway, New York 1, N. Y.

339. NEW LUBRICATED PLUG VALVES — Illustrated booklet by The William Powell Co. features a new line of semi-steel and steel lubricated plug valves. Advantages include quick and positive shut off. — THE WILLIAM POWELL COMPANY, 2525 Spring Grove Ave., Cincinnati 22, Ohio.

CARDING, SPINNING, WINDING . . .

401. LUMMUS DUSTLESS, STEEL BLENDING FEEDERS — Bulletin describing automatically closing, positively locking door on feeders to prevent overloading, choking. — ALDRICH MACHINE WORKS, Greenwood, S. C.

402. AUTOMATIC CLEANING AND OVERHEAD HANDLING FOR TEXTILE MILLS — 24-page bulletin describing the American Monorail Automatic Cleaner for preventing accumulation of lint on spinning, twisting, winding and warping machines. Also for cleaning monitors and card room ceilings. — THE AMERICAN MONORAIL CO., Cleveland, Ohio.

403. TRAVELING CLEANERS — 4-page bulletin describes the improved Parks-Cramer Frame and Room Cleaners including the Underframe and Floor Sweepers. — PARK-CRAMER CO., Fitchburg, Mass.

404. LAPLESS ENDLESS SPINNER — Bulletin and full information will be supplied on lapless endless spinner and coning belting. — TON-TEX CORPORATION, 31 Columbus Ave., Englewood, N. J.

408. CARD GRINDING INFORMATION — Outlines care of grinders, instructions on speed to run grinders, amount of oil to add to machine and other pertinent information. — B. S. ROY & SON CO., Worcester, Mass., and Charlotte, N. C.

411. SHEET METAL WORK — Pamphlet describes spinning cylinders, aspirators, card screens, sheet metal specialties. — GASTONIA TEXTILE SHEET METAL WORKS, INC., 222 East Long Avenue, Gastonia, N. C.

412. SERVICE FOLDER — Folder covers textile metal products including spinning and twisting cylinders, card screens, etc. — JENKINS METAL SHOPS, INC., Gastonia, N. C.

413. HIGH SPEED, AUTOMATIC QUILLER — Color booklet by Schlafhorst describes the "Autocopser" Automatic Quiller. Gives advantages, space requirements, etc. — TERRELL MACHINE CO., INC., Charlotte, N. C.

414. WORSTED SPINNING — Bulletin explaining and illustrating Saco-Lowell's new system for worsted spinning, from top yarn in five economical and efficient stages. — SACO-LOWELL SHOPS, 60 Baterymarch St., Boston 10, Mass.

415. DOUBLER-TWISTER FOR LARGE PACKAGES — Bulletin describing two new machines producing straight or tapered top bobbins. Suitable for filament or spun yarns up to three pound capacity. Individual thread stop motion fully discussed. — FLETCHER WORKS, INC., Philadelphia, Pa.

416. THE BRIEF SAGA OF THE RING TRAVELER — An interesting history relative to the ring traveler, which is in reality the basis of the spinning frame. John Thorpe's invention of ring traveler, the development of the spindle, and the invention of Rabeth's Bolster type spindle are covered. —NATIONAL RING TRAVELER CO., Pawtucket, R. I.

417. FEATHERTOUCH DRAFTING — Booklet describes in detail with pictures the most uniform drawing, the strongest drawing with the highest production per frame at the lowest cost. — IDEAL INDUSTRIES, INC., Bessemer City, N. C.

419. TEXTILE APRONS — Illustrated folder showing the steps in manufacture of genuine leather aprons for all types of long draft spinning and card room machinery. — TEXTILE APRON COMPANY, East Point, Ga.

422. WARPER BEAMS — Folder describes the high speed for rayon tire cord, cotton warper beams, cast aluminum end supports and large diameter heads. — U. S. BOBBIN SHUTTLE CO., Lawrence, Mass.

423. SPINDLE OILING MACHINE — Information available on new Spindle Oiling Machine. Features include filter system to clean oil for reuse; smaller size for narrow aisles. — WICACO MACHINE CORP., 4800 Stenton Ave., Wayne Junction, Philadelphia 44, Pa.

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The new Barber-Colman Type "DW" Warper shown above will wind slasher beams as large as 40" head. It has all the features of the familiar Type "VW", plus several new ones such as a pivoted comb support which moves the comb forward as the beam fills. The driving drum, clutch, brake, and motor — all of which are larger and more rugged to handle the heavier loads — are now arranged back of, rather than beneath, the beam. The creel shown is not the new Type "DC" Creel but is the standard Type "VC", as the new Warper can be used with either the large *or* the standard package. *For further details, please write for descriptive literature, or ask your Barber-Colman representative.*

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424. GREASE-SEALED, ANTI-FRICTION ROLLS — Booklet contains description and engineering drawings of the Cole grease-sealed, anti-friction rolls. Also contains information on dual apron controlled drafting units. — COLE ENGINEERING CORP., P. O. Box 153, Columbus, Ga.

425. HANDY REFERENCE TABLES — Folder showing spinning traveler speeds, sizes of ring flanges, etc. — VICTOR RING TRAVELER CO., Providence, R. I., and Gastonia, N. C.

426. UNIRAIL UPTWISTER — Bulletin describes Universal Winding's headless package or bobbin take-up Unirail Uptwister which gives you higher yarn quality and better packages at faster speeds and lower costs, according to the bulletin. Well illustrated with advantages discussed. — UNIVERSAL WINDING COMPANY, P. O. Box 1695, Providence, R. I.

429. BETTER FLYER AND SPINDLE EFFICIENCY — Entertaining booklet by Ideal Machine Shops gives facts about Flyers and Spindles which have helped many mills gain more efficient production, better yarn quality. — IDEAL MACHINE SHOPS, INC., Bessemer City, N. C.

431. TEXTILE VACUUM SYSTEM — Color bulletin by Spin Sa Vac describes application of their vacuum system to drawing, roving and spinning processes, and for the removal of broken ends, fly or sliver. Complete diagrams and sheets of typical installations. — SPIN SA VAC CORPORATION, 1438 South Tryon St., Charlotte, N. C.

432. PRECISION TEXTILE WINDING — Bulletin on Kidde Tensions and Density Control for winding rubber cones. — WALTER KIDDE & CO., INC., Belleville, N. J.

433. PERMANENT PLATE MAGNETS — Bulletin shows how Eriez Magnetic Separators prevent fires and protect machinery from tramp iron in all types of textile mills. — ERIEZ MFG. CO., Erie, Pa.

434. SPINNING AND TWISTER RINGS — Catalog and price list now available on Whitinsville "Diamond Finish" spinning and twister rings. Complete details and pictures. — WHITINSVILLE SPINNING RING CO., Whitinsville, Mass.

435. DOUBLE DECK TWISTERS — Bulletin describes Jumbo (8 oz. to 16 oz. headless or take-up spool packages) and Acme (up to 10 oz. packages) models for high speed twisting of silk, rayon, nylon, etc., to finest deniers. — U. S. TEXTILE MACHINE CO., Scranton 8, Pa.

436. MAINTENANCE INFORMATION FOR YOUR SCOTT TESTER — Booklet containing maintenance data for calibration of Scott Testers, clamps for testers, gear-box lubrication, and recording. — SCOTT TESTERS, INC., Providence, R. I.

437. PRECISION GEAR BULLETINS — Now available from Precision Gear are bulletins on machinery products for cleaning and picking, roving frames, spinning and twisting and a general catalog on gears. — PRECISION GEAR AND MACHINE CO., 2001 N. Tryon St., Charlotte 2, N. C.

438. HEADLESS PACKAGE TWISTER ELIMINATES REDRAWING — Literature shows high-speed Face Drive Twister for accurately building tapered or straight-end headless packages which go direct to quilling or warping without redrawing. — U. S. TEXTILE MACHINE CO., Scranton 8, Pa.

439. PNEUMAFIL SUCTION CLEANING SYSTEMS — Booklet describes types of Pneumafil Systems, gives details of new Collector Unit model C-4. New type LFC Pneumafil is also discussed. Diagrams, comparison charts and installation pictures included. — PNEUMAFIL CORP., Charlotte 8, N. C.

440. CUSTOM MADE THREAD GUIDES — Color brochure describes complete line of American Lava Company's thread guides. Composition, properties, specifications of all designs included. — AMERICAN LAVA CORPORATION, Chattanooga 5, Tenn.

444. OPENING AND CLEANING MACHINERY— Color brochure by Dodenhoff describes their waste machine, enclosed feeder, conveyors and cleaner. Specifications included with pictures. — W. D. DODENHOFF CO., Box 178, Greenville, S. C.

445. ROLLER BEARING SPINDLES — Illustrated booklet showing various types of Marquette Roller Bearing Spindles. The unique full-floating footstep bearing is pictured in cut-away views, and its advantages are described. — THE MARQUETTE METAL PRODUCTS CO., 1145 Galewood Ave., Cleveland, Ohio.

447. CONE WINDER — Form A95 describes the Foster Model 102 winder which produces the Foster knitting cone for spun yarns, warping cones and tubes for dyeing and twister supply. — FOSTER MACHINE COMPANY, Westfield, Mass.

448. AUTOMATIC BLENDING SYSTEM—Dodenhoff system, called "Fiber Meter" is fully described in color booklet. Gives actual operating results, shows pictures and illustrates typical conversion of old fashioned systems. — W. D. DODENHOFF CO., 745 Loundes Hill Road, Greenville, S. C.

449. NEW CONDENSER TAPE — Literature by Benjamin Booth describes newly introduced SUPR-O-TAPE, an impregnated fabric condenser tape. Shows actual sample of tape and gives complete prices. — BENJAMIN BOOTH CO., Allegheny Ave., & Janney St., Philadelphia 34, Pa.

450. HIGH SPEED AUTOMATIC QUILLER — Color booklet describes the Schlafhorst "Autocopser," listing its advantages and giving dimensions. — TERRELL MACHINE CO., INC., P. O. Box 928, Charlotte, N. C.

451. ROLLER BEARING SPINDLE — Color booklet gives principal features and main advantages of 8MM Roller Bearing Spindle. Detailed drawings included. — H. PHIL WORTH, Box 1555, Greenville, S. C.

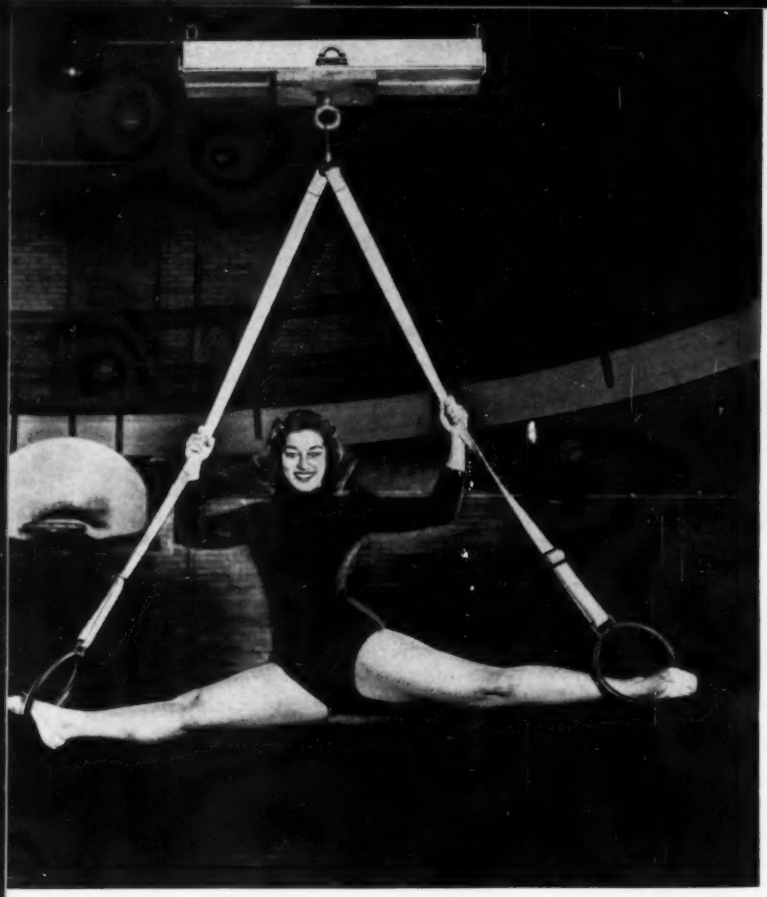
452. PNEUMAFIL LINT-FREE CREEL — Color booklet describes the new Airfoil Design Pneumafil type LFC with Built-in Lint-Free Creel. Gives complete details and pictures. — PNEUMAFIL CORPORATION, Charlotte 8, North Carolina.

453. EVENNESS TESTER — Folder explaining how this Tester takes the guess out of quality control and each processing step from carding through spinning. — USTER CORPORATION, Charlotte, N. C.

458. CONICAL RINGS AND FLYERS — Special data available on the Herr conical rings and flyers. — HERR MANUFACTURING CO., INC., 318 Franklin St., Buffalo 2, N. Y.

459. TENSION CONTROLS — Folder describing tension compensation and automatic tension controls. Three models — Standard, Warp, and Double Disc fully described with specific application. — WALTER KIDDE & CO., INC., 199 Main St., Belleville 9, N. J.

461. PRECISE WIND MACHINE — Form A-92 describes the Foster Model 75 widely used for winding straight or pineapple cones and tubes of rayon, nylon and other filament yarns. — FOSTER MACHINE COMPANY, Westfield, Mass.



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THE DARING YOUNG GAL ON THE ERIEZ TRAPEZE! Though she swings through the air with the greatest of ease, this pretty aerialist has nothing to worry about. Her rigging is held securely by an Alnico V magnet, hung from the ceiling of the gym. This idea of herculean magnetic power has found widespread acceptance in the textile industry, where permanent-powered magnetic separators are used in processing lines to remove tramp iron which could cause fires, machinery damage and production losses in cotton, woolen, rayon and waste mills. *All Eriez Magnets are non-electric, self-contained. They operate without any wires or attachments. Their magnetic power lasts a lifetime. The first cost is the only cost.*

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Eriez' free booklet "Magnetic Ideas" can help you. Send for it without obligation. Address: Eriez Manufacturing Company, 72E Magnet Drive, Erie, Pa. Or, on your specific request Eriez' factory-trained field men backed by Eriez' laboratory and engineering know-how will be happy to study your particular problem, make a plant survey and offer helpful "Magnetic Ideas".

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462. TEXTILE MACHINERY PARTS CATALOG — A 24-page illustrated catalog describing the complete line of Dayco and Thorobred textile machinery parts including Cots, Aprons, Loop Pickers, Lug Straps, etc. — DAYTON RUBBER CO., Dayton, Ohio.

467. CARD CLOTHING — 8-page booklet by Benjamin Booth Company describes Strip-O-Matic Card Clothing and its advantages. — BENJAMIN BOOTH COMPANY, Allegheny Avenue & Janney Streets, Philadelphia, Pennsylvania.

469. SHORT CUT TO STAPLE FIBER SPINNING — Color brochure shows the ten steps in operation of the Turbo Tow Stapler, gives technical details and diagrams. — TURBO MACHINE COMPANY, Lansdale, Pa.

470. RATCHET DRIVE LUBRICATOR — Technical reference sheet describing an automatic ratchet-driven lubricator is offered. Describes in detail the key features, includes photographs. — HJUR LUBRICATING CORP., 151 W. Passaic Avenue, Rochelle Park, N. J.

471. FACTS ABOUT YOUR FLYERS AND SPINDLES — Booklet by Ideal Machine Shops shows how smooth Flyer and Spindle operation can help produce higher and more efficient output, good quality yarn, minimum wear, and larger bobbins. — IDEAL MACHINE SHOPS, Bessemer City, N. C.

472. TWISTING MACHINERY — Bulletin gives outstanding features, specifications facts and useful information on Novelty Yarn Twisters for Cotton, Silk, Worsted and Rayon Yarns. — COLLINS BROTHERS MACHINE COMPANY, 647 Roosevelt Ave., Pawtucket, Rhode Island.

473. ALUMINUM SECTION BEAMS — Information available on advantages of Hayes beams. Includes prices and delivery schedules. — HAYES INDUSTRIES, INC., Jackson, Mich.

474. BALL BEARING COMB BOXES — Southern States Equipment Corp. offers literature on their famous C-1 Ball Bearing Comb Boxes. Description, working principle, cut-a-way views shown. — SOUTHERN STATES EQUIPMENT CORP., Hampton, Ga.

475. TEXTILE ROLL COVERINGS AND MILL SUPPLIES — Color booklet by Armstrong shows and describes their complete line of textile roll coverings, including also loom supplies, mill supplies, roll covering for cotton, silk and synthetic and woolen and worsted systems. An excellent guide book. — ARMSTRONG CORK CO., INDUSTRIAL DIV., Lancaster, Pa.

476. TEXTILE FIBER OPENER FOR COTTON, SYNTHETICS, WOOL — New brochure by Cen-Tennial Cotton Gin Co. gives complete data on the Cen-Tennial Opener which incorporates improvements on the original SRRL Opener. Complete operating procedure is described. — CEN-TENNIAL COTTON GIN CO., Columbus, Ga.

478. TIPS ON CARDING PROCEDURE—Monthly bulletin by Ashworth Brothers includes many useful tips and advice on carding operation, maintenance and care and is available to anyone interested. Bulletin is a reprint of section appearing on green paper in this issue. — ASHWORTH BROTHERS, Fall River, Mass.

485. WEAVER'S KNOTTER — A catalog on the Boyce Weaver's Knotter giving a few instructions as to its use, recommendation as to the proper type knotter for the various types of yarns, and the spare parts that go to make up the knotter. — A. B. CARTER, INC., Gastonia, N. C.

486. COTTON SIZING WASTE PROBLEM SOLUTION — Booklet describes the use of soluble, low-pollutional CMC in place of starch and how this can reduce costs. — HERCULES POWDER CO., Wilmington 99, Delaware.

WEAVING, SLASHING . . .

501. LOOMS — An accordion type folder is available entitled "Unfolding to You the World's Largest Line of Looms." Information on all types fully discussed. — CROMPTON & KNOWLES LOOM WORKS, Worcester 1, Mass.

502. COUNTING AND MEASURING DEVICES—Condensed textile catalog illustrating and describing pick counters, hank counters, cut meters, measuring counters. Wide range of counting devices for production recording on all types of textile machinery. — VEEDER-ROOT, INC., Hartford, Conn.

504. LOOM SUPPLIES — Literature describing complete line of straps, strapping, pickers, dobby cords, sticks, binders, bumpers, brake lining and allied products. — E. H. JACOBS NORTHERN DIV., THE BULLARD CLARK CO., Danielson, Conn.

505. INNOVATION IN TEXTILE DRYING — Booklet by J. O. Ross gives details on Steam or Gas "Hot Air" Slasher for high speeds at low cost. — J. O. ROSS ENGINEERING CORP., 444 Madison Ave., New York 22, N. Y.

506. SLASHING HINTS — A 20-page booklet offering helpful hints on warp sizing. Subjects: Size cooking equipment, section beam tension, sizing selvages, cooking, use of split rods, weighing for the mix, tips on cooking equipment, storage in kettles, etc. — SEYDELL-WOOLLEY & CO., 748 Rice St., N.W., Atlanta, Ga.

508. LOOM PRODUCTION CHARTS — Convenient celluloid card showing yards per loom per week of 40 hours at various loom speeds. — RALPH E. LOPER CO., Greenville, S. C.

510. CONTROLLED SIZING — Brochure in color describes the legend, operation and specification of the new Griffin Size Machine. Features most important basic improvements in size machines in many years. — IRA L. GRIFFIN & SONS, P. O. Box 1576, Charlotte, N. C.

511. ALUMINUM BEAMS — Catalog No. 1-21 describes Hayes magnesium and aluminum specialties for the textile industry. Illustrates this company's beams that are one-third the weight of conventional types. — HAYES INDUSTRIES, INC., Jackson, Mich.

514. THE STORY OF STARCHES — Semi-technical booklet tells the story of starches and information on how they are produced, the creation of new specialty starches, the unique "man-made" starch derivatives, and the handling of starches. — NATIONAL STARCH PRODUCTS, INC., 270 Madison Avenue, New York 16, New York.

515. WARPING, SLASHING, WEAVING ARNEL YARNS — 8-page booklet preliminary information on Arnel Triacetate Yarns. — CELANESE CORP. OF AMERICA, TEXTILE DIVISION, Box 1414, Charlotte, N. C.

517. LOADING SYSTEM — Bulletin 417, on pneumatic loading system for Saco-Lowell slasher size box squeeze rolls, contains installation photo, features, specifications, and prices. — THE FOXBORO COMPANY, Foxboro, Mass.

How much does it Cost to be a Good Neighbor?

This is the third in a series of advertisements based on a technical paper by B. W. Dickerson, Sanitary Engineer, Hercules Powder Company. A complete copy of the report or additional technical data on CMC can be obtained by writing directly to Hercules.

Pollution control in textile finishing operations can be expensive. If abatement is to be achieved by the biological treatment of mill wastes, management is faced with a capital outlay for plant construction and the additional monthly cost of operating the treatment plant.

Is there any way of being a good neighbor without such prohibitive cost? Some mills have found the answer in CMC Warp Size. Years of research plus actual use in mills indicate the value of CMC Warp Size as a means of reducing pollution. In many instances, this can be accomplished without resort to a waste treating plant. Where the pollutional load is exceptionally high, introduction of CMC Warp Size into the process significantly reduces the size of the treatment plant required.

A 2 to 1 starch-CMC Warp Size combination can substantially reduce BOD (Biochemical Oxygen Demand) while also reducing add-on and the need for enzymes in the desizing process. A hypothetical case best illustrates how CMC can be economically employed to provide pollution abatement.

A typical small plant might face the necessity of reducing the BOD in its mill wastes by 30%. Accomplishing this by the construction of a treatment plant could involve a capital expenditure upwards of $250,000, *plus* annual operating expenses reaching 10% of the initial capital outlay. By the introduction of a 2 to 1 starch-CMC Warp Size combination in the warp sizing process in place of the starch previously used, add-ons can be cut almost in half. The reduction thus achieved in total waste solids, together with the significant reduction in BOD obtained when CMC Warp Size is used, would provide the desired abatement without recourse to a treatment plant. At the same time, any slight original increase in cost of introducing the starch-CMC Warp Size combination into the sizing process would be substantially less than the operating cost alone of the treatment plant that would otherwise be required.

Where the BOD is so high that CMC Warp Size alone can not solve the problem completely, the treatment plant requirements can be drastically reduced in size. That's why many mills have found in actual practice that by using CMC Warp Size it is possible to be a good neighbor at low cost.

Virginia Cellulose Department

HERCULES POWDER COMPANY

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519. ALIGNING LAYS — Informative booklet gives setting instructions for aligning lays. Complete treatment, including step-by-step drawings.—DRAPER CORPORATION, Hopedale, Massachusetts.

521. STEEL WARP BEAMS — 20 page Catalog No. 45 illustrating Standard and Special Purpose Warp Beams for the weaving industry, both broad-loom and narrow fabrics. Also Textile Machinery Specialties. — MILTON MACHINE WORKS, INC., Milton, Pa.

525. STAINLESS DRY CANS — Bulletin describes advantages of Unistel Stainless Dry Cans including details of construction. Profusely illustrated. — UNISTEL TEXTILE MACHINE CORP., 225 Westchester Avenue, Port Chester, N. Y.

530. ROTARY UNIONS — New catalogs shows how to cut costs, get better sealing on can dryers, slashers, calenders, etc. Catalog No. 500 entitled "Where Good Connections Count." — PERFECTING SERVICE COMPANY, Atando Ave., Charlotte, N. C.

537. WEST POINT'S HOT AIR SLASHER — Bulletin describes advantages and capacities of new hot air slasher by West Point Foundry and Machine Works. Detailed specification included. — WEST POINT FOUNDRY AND MACHINE WORKS, West Point, Georgia.

538. AIR SLASHER DRYER — Pamphlet by Proctor & Schwartz shows construction and operating details of the Proctor Air Slasher Dryer. Advantages listed and cut-away view shown. — PROCTOR & SCHWARTZ, INC., 7th St. and Tabor Rd., Philadelphia 20, Pa.

541. BOOKLETS ON COCKER CUSTOM BUILT EQUIPMENT — Six new bulletins available from Cocker include information on the high speed Warp Sizer, high speed Beam Warper, Cocker Creels and Tensions, Beam Back-Winders, Indigo Dyeing Ranges, Kettles, T-Boxes, etc. — COCKER MACHINE & FOUNDRY CO., Gastonia, N. C.

545. NOPCO CHEMICAL DATA SHEETS — Now available are Nopcostats, Nopco Sizes N and D. Important points in Warp Sizing, Interpretation of Analysis, Wetting Agents, Balanced wool and worsted oils, Acetate warp sizing, Viscose warp sizing, Rayon soaking. — NOPCO CHEMICAL CO., Harrison, N. J.

DYEING, FINISHING CLOTH ROOM . . .

601. CONTINUOUS PEROXIDE BLEACHING RANGES — Booklet gives illustrations and describes uses and gives specification of Ranges. — RODNEY HUNT MACHINE CO., 49 Mill St., Orange, Mass.

603. EMCO ROTARY CUTTER WINDER — Bulletin gives applications, sizes and exclusive features.— H. W. BUTTERWORTH & SONS CO., Bethayres, Pa.

604. DYEING, BLEACHING AND DRYING EQUIPMENT — Excellent color brochure by Morton describes their complete line of dyeing, bleaching and drying equipment for cotton, wool and synthetics. — MORTON MACHINE WORKS, 1718 3rd Ave., Columbus, Ga.

606. HYDRAULIC POWER UNITS — Literature describing hydraulic unit, motor, pump, reservoir, valving a small compact unit for operating of hydraulic calenders, presses, hydraulic controls, etc. — B. F. PERKINS & SON, INC., Holyoke, Mass.

607. RIBBON CALENDERS — Brochure features Dickerhoff Ribbon Calenders for the purpose of calendering, embossing, etc., of narrow fabrics. — ENGINEERING WORKS, HERM. DICKERHOFF LTD., Wuppertal Barmen, Western Germany.

608. WASHERS FOR SCOURING, BLEACHING, ACIDIFYING — Well-illustrated booklet shows how Sargent's modern, high-capacity, continuous process washers can help maintain quality and decrease costs. Contains operation diagram and good commentary on construction. — C. G. SARGENT'S SONS CORPORATION, Graniteville, Massachusetts, U.S.A., for bulletin 105.

609. WET PROCESSING MACHINERY — Complete file of bulletins on Riggs and Lombard Wet Processing Machinery available. Write for catalog index sheet giving summary. — RIGGS AND LOMBARD, INC., Suffolk Street, Lowell, Mass.

610. PROCTOR DRYING MACHINERY FOR THE TEXTILE INDUSTRY — Illustrated, descriptive catalog on all types of dryers for raw stock, warps, package dyed and automatic skein yarn. Also includes pre-boarding and automatic boarding machines for hosiery. — PROCTOR & SCHWARTZ, INC., 7th and Tabor Rd., Philadelphia, Pa.

611. LOW COST DYEING — Bulletin by Blickman describes their fully enclosed, stainless steel Dyebox. Reports increased production per man hour and more runs per day at lower cost. Write for bulletin 7034.—S. BLICKMAN, INC., Gregory Ave., Weehawken, N. J.

612. JAMES HUNTER MACHINES FOR DYEING AND FINISHING — Comprehensive Catalog contains complete file of bulletins on all Hunter machines having application in dyeing and finishing. Excellent reference data for dyehouses. — JAMES HUNTER MACHINE CO., North Adams, Mass.

613. HERMAS TEXTILE MACHINES — Selection includes brochures on Unwind Stand, Automatic Guiding Unit, Jet Mixer, Selvage Trimming, Clothroom Machinery. — HERMAS MACHINE CO., Hawthorne, N. J.

615. HIGH PRODUCTION EXTRACTOR FOR RAW STOCK—YARN—HOSIERY — Descriptive bulletin and full information on automatic Twintainer Extractor with bottom-unloading removable baskets. Machine replaces three conventional extractors, lowers labor costs. — FLETCHER WORKES, INC., Philadelphia, Pa.

617. AUTOMATIC CONTROL SYSTEM FOR CONTINUOUS BLEACHING — Illustrated folder describes the new method of controlling the temperature, pressure, and liquid level in the continuous bleach operation. — TAYLOR INSTRUMENT COMPANIES, Rochester 1, N. Y.

618. APPLICATION OF FUGITIVE DYES — Bulletin describes UNITINT operation, giving advantages of effectively controlling the application of fugitive dyes to various fibers. — W. D. DODENHOFF COMPANY, 745 Lowndes Hill Rd., Greenville, S. C.

619. PENFORD FINISHING GUMS — Booklet by Penick & Ford gives complete data, including physical properties and results which may be expected on Penford gums. — PENICK & FORD, Ltd., 420 Lexington Ave., New York 17, N. Y.

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620. REGENERATION OF ZEOLITE WATER SOFTENERS — Booklet explains advantages of International's Lixate Process in regeneration of zeolite water softeners. Shows how it cuts costs and does a better job. — INTERNATIONAL SALT COMPANY, INC., Scranton, Pennsylvania.

621. "DYEING SYNTHETIC FIBERS" — Brochure giving a comprehensive, detailed analysis of the methods and materials available for dyeing synthetic fibers. — GENERAL DYESTUFF CO., 435 Hudson St., New York 14, N. Y.

627. SINGLE APRON STOCK DRYERS — Folder presenting the latest idea in automatic drying which every mill having drying problems can profitably use to meet modern manufacturing conditions. — C. G. SARGENT'S SONS CORP., Graniteville, Mass.

628. TREATMENT OF SYNTHETIC TEXTILE FINISHES — High speed drying and curing of synthetic finishes by means of far-infrared radiation is covered in a new 22 page folder entitled "The Textile Report" by Edwin L. Wiegand Company, 7760 Thomas Blvd., Pittsburgh 8, Pa.

630. COMPLETE NAPTHOL MANUAL — Practical working handbook, 110 pages, on textile dyeing and printing applications of Naphthols. Write on company letterhead to PFISTER CHEMICAL WORKS, Box 326, Ridgefield, N. J.

631. ELIMINATE DYE-BATH SHOCK — Data sheet by Foxboro shows how woven fabrics and hosiery may be protected from Crow's-feet, uneven shade, creasing caused by too rapid cooling of goods.—FOXBORO COMPANY, 487 Neponset Ave., Foxboro, Mass.

632. LUG STRAP WASHERS — Series 1-C illustrated bulletin detailing right and wrong application and use of washers. — E. H. JACOBS NORTHERN DIV., Danielson, Conn.

635. NAPPERS FOR TREATING ANY FABRICS — Bulletin gives complete details on the Muller Tri-Napping Machine with 24, 30, or 36 rollers. Dimensions and weights included. — FRANZ MULLER, M. Gladbach, Germany.

637. BALL BEARING TURN TABLE — Leaflet describing this 48 inch diameter steel turn table for use in mills where the cloth is delivered in rope form to trucks and the trucks are placed in position ahead of a Scutcher or cloth opening machine. Advantages discussed. — BIRCH BROTHERS, INC., 32 Kent St., Somerville, Mass.

639. ROTARY DYEING MACHINE — Booklet No. 425 illustrating the features of these stainless steel machines used for dyeing hosiery, hats, gloves, socks, etc. — SMITH, DRUM & CO., Allegheny Ave. at 5th St., Philadelphia 33, Pa.

642. SELVAGE OR BACK MARKING MACHINE —Complete specifications and performance data on a new fully automatic marking machine available from Kaumagraph. — KAUMAGRAPH CO., Wilmington 99, Delaware.

643. SURFACE-ACTIVE AGENT — Bulletin gives characteristic properties, suggested applications, etc. of the Nonionic Octylphenoxyethanol Triton Surface-Active Agents. — ROHM & HAAS CO., SPECIAL PRODUCTS DEPT., Philadelphia 5, Pa.

644. DYEING, BLEACHING, FINISHING BULLETINS — Saturator for roped goods, J-Box (for Becco process), J-Box (for duPont Process), Continuous Bleaching Ranges, Carrier Reels, Drum-Type Plaiter are available from WIESNER-RAPP CO., INC., 1600 Seneca Street, Buffalo 10, New York.

653. GUIDERS AND TENSION DEVICES — Illustrated and described are the Mount Hope Precision Guiders and open width Tension Devices used for accurate, straight line guiding of open width goods. Bulletin 80-PG. — MOUNT HOPE MACHINERY CO., Fifteen Fifth St., Taunton, Mass.

659. SONOCO TUBES FOR PACKAGE DYEING — Color bulletin describes Sonoco's DYTEX tubes for one-time use in standard package dyeing equipment to achieve uniformity. — SONOCO PRODUCTS CO., Hartsville, S. C.

DYESTUFFS, CHEMICALS, SOAPS . . .

701. MAGNESIUM APPLICATIONS — Case history information on magnesium application in the textile field, published bi-monthly with latest developments in the magnesium industry. — DOW CHEMICAL CO., Midland, Mich.

704. FUNDAMENTALS OF INDUSTRIAL WATER TREATMENT PROCESSES — 24-page booklet entitled "If You Use Water" discusses the fundamentals of the three major classifications of industrial water treatment based on ion exchange: softening, dealkalization, and deionization. — ROHM & HAAS COMPANY, RESINOUS PRODUCTS DIV., Washington Square, Philadelphia 5, Pa.

705. THEORETICAL AND APPLIED SILK-SOAKING—Attractive twenty-three page booklet outlining methods of silk-soaking and cutlining investigation on the soaking, back-winding and degumming of silk.—HART PRODUCTS CORP., 1440 Broadway, New York 18, N. Y.

707. BRINE FOR TEXTILE INDUSTRY — 32-page booklet on the Lixate Process replaces former booklet on making brine that has been a standard reference for years. Contains much more technical information. — INTERNATIONAL SALT CO., INC., Scranton, Pa.

710. DEPUMA — An odorless, viscous, non-evaporating emulsion which is highly efficient as an anti-foam, useful in all phases of dyeing and printing. — AMERICAN ANILINE PRODUCTS, INC., 50 Union Square, New York, N. Y.

712. CATALYST AC-6 — Booklet describes how Catalyst AC-6 steps up curing efficiency as much as 25%. Free eight-ounce bottle upon request. — MONSANTO CHEMICAL COMPANY, PLASTIC DIVISION, DEPT. TI-3, Springfield 2, Mass.

714. NEW SODA ASH BULLETIN — 64-page edition contains both new material and revisions of previously used data covering the subject. — SOLVAY SALES DIV., 40 Rector St., New York 6, N. Y.

715. AQUAROL AND ARKANSAS PRODUCTS — Bulletin on Aquarol water repellent finish with method of preparing bath; also on other Arkansas products for cotton, wool, silk and yarn, hosiery processing. — ARKANSAS CO., INC., Newark, N. J.

719. WOOL OIL — Descriptive booklet on antistatic fiber lubricant, Twitchell 7421. Performance factors given particular emphasis are static control, scourability, lubricity and resistance to yellowing. — EMERY INDUSTRIES, INC., DEPT. 5, Carew Tower, Cincinnati 2, Ohio.

June—TUFTED TEXTILES

This will be the second annual review of a growing phase of textile manufacturing. Changes are taking place so quickly that extra information on this subject is essential to all mill men. All aspects of tufted textiles will be covered, including merchandising.

September—WET PROCESSING

This issue will emphasize dyeing, bleaching, and finishing and will give added impetus to the constant search for improvements. TEXTILE INDUSTRIES carries regularly more material on all WET PROCESSING than does any other general textile publication.

October—SOUTHERN TEXTILE EXPOSITION NUMBER

TEXTILE INDUSTRIES has been closely connected with the Southern Textile Exposition since the first show. This issue will carry advance news on the 19th Exposition at Greenville, S. C., October 1-5. It will also carry the directory of exhibits and exhibitors to help readers plan their time at the show most effectively.

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For 1956, the annual review will be consolidated with a completely new Buyers' Guide in a 13th Issue November 20th.

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720. INDUSTRIAL OIL — Bulletin catalogs all of Swift's Industrial Oil and Fatty Acid products. Included are detailed specifications, shipping information and suggested usage on products of animal, vegetable and marine sources. — SWIFT & COMPANY, INDUSTRIAL OIL DEPARTMENT, 1809 165th Street, Hammond, Indiana.

722. RESINS & LATICES — Booklet describes chemigum, latex, pliolite latex, pliovia latex, pliovic AO and their application. Gives properties of Goodyear Latices. — GOODYEAR CHEMICAL DIV., 1144 East Market St., Akron 16, Ohio.

723. CHEMICAL CATALOG — Features detergents, wetting agents, emulsifiers, brighteners, sequestrants, dyeing assistants with chemical composition, properties and application.—ANTARA CHEMICALS DIV., GENERAL ANILINE & FILM CORP., 435 Hudson St., New York 14, N. Y.

724. WICA CHEMICAL BULLETINS — Bulletins describe in technical terms the various Wica Products for textiles. Issued each month for the benefit of industry, they are an excellent help in wet processing. To get on the mailing list write WICA CHEMICALS, INC., P. O. Box 506, Charlotte, N. C.

726. CELANESE ORGANIC CHEMICALS—Booklet gives complete technical details on Celanese organic chemicals including uses and descriptive data. Useful addenda to files.—CELANESE CORPORATION, CHEMICAL DIVISION, 180 Madison Ave., New York 16, N. Y.

727. COLOR PRINCIPLES — Booklet available from Sandoz Chemical describes the fundamental principles of color and its measurement. Booklet has been adopted by several of the leading textile schools. — SANDOZ CHEMICAL WORKS, INC., 61 Van Dam Street, New York 13, N. Y.

729. STATIC AND STATIC CONTROL — Papers deal with historical background of static electricity and the problems caused by it along with methods of controlling them. — DEXTER CHEMICAL CORP., 319 Edgewater Road, New York 59, N. Y.

733. WOOL OILS — Twin booklets by Proctor and Gamble tell of the influence of wool oils in producing quality yarns and fabrics, and of Proctor and Gamble's Proxol T, an outstanding wool oil. — PROCTOR AND GAMBLE DIST. CO., Cincinnati, Ohio.

734. BLEACHING WITH PEROXYGEN CHEMICALS — Bleaching methods for cotton, rayon, nylon and animal fibers are comprehensively treated in Becco Research and Development Dept., Bulletin No. 52, now available. — BUFFALO ELECTRO-CHEMICAL CO., INC., Station B, Buffalo 7, New York.

745. RAPIDASE FOR DESIZING — Bulletin explaining in detail the properties and characteristics of Rapidase. — WALLERSTEIN CO., INC., 180 Madison Avenue, New York 16, N. Y.

746. INDUSTRIAL CHEMICALS — 24-page booklet listing alphabetically Harshaw industrial chemicals and applications. — THEHARSHAW CHEMICAL COMPANY, 1945 East 97th Street, Cleveland, Ohio.

747. CATIONIC SURFACE ACTIVE AGENT — Technical bulletin describes Harshaw's UVERSOFT "D" which produces full, soft hand while acting as an outstanding anti-static agent. — HARSHAW CHEMICAL CO., 1945 East 97th St., Cleveland 6, Ohio.

748. CHEMICALS, DYES AND INTERMEDIATES — Complete file of bulletins available on Metro-Atlantic products. Covers wide range. Write for product resume showing bulletins offered to METRO-ATLANTIC, INC., Centredale 11, R. I.

753. TRITON X-100 — Booklet available describing this highly concentrated detergent and wetting agent. Main uses fully discussed and chemical properties brought out. — ROHM & HAAS COMPANY, Philadelphia 5, Pa.

757. THE CHEMISTRY OF CYNANURIC CHLORIDE — Very comprehensive technical text by American Cyanamid Co. Gives physical properties, reaction chart, chemical properties, potential applications, toxicity, table of alcohol reactions, table of amine and related compound reactions. — AMERICAN CYANAMID CO., 30 Rockefeller Plaza, New York 20, New York.

765. DU PONT PEROXIDE BLEACHING SYSTEMS — New book illustrating and describing this continuous peroxide bleach system. Layouts and other information included. — E. I. DU PONT DE NEMOURS & CO., ELECTROCHEMICAL DEPT., Wilmington, Del.

769. SURFACE TENSION DEPRESSANT — The Booklet, "Mercerizing and Alkamerce — The Ideal Dry" which can be used as a wetting agent; a dye leveling agent, a penetrant in package dyeing. — HART PRODUCTS CORP., 1440 Broadway, New York, N. Y.

774. ROYCE TEXTILE CHEMICALS — This booklet briefly describes the leading Royce products for textile processing, printing, dyeing and finishing. — ROYCE CHEMICAL COMPANY, Carlton Hill, N. J.

775. ETHANOLAMINES — Book describes monoethanolamine, diethanolamine, and triethanolamine, listing their applications, chemical and physical properties, physiological properties, etc. — NITROGEN DIVISION, ALLIED CHEMICAL AND DYE CORPORATION, 40 Rector St., New York 6, N. Y.

KNITTING . . .

800. SYNTHANE TEXTILE PARTS — Folder on laminated bobbins, pirns, headless package tubes, hosiery turning and examining forms, sizing bobbins, etc. — SYNTHANE CORP., 9 River Road, Oaks, Pa.

801. THE WILDMAN SINGLEHEAD FULL-FASHIONED HOSIERY MACHINE — Literature on request from the WILDMAN MFG. CO., FULL FASHIONED DIVISION, Norristown, Pa.

803. TIPS ON SEAMING NYLON STRETCH HOSIERY — Pamphlet lists in detail observations and suggestions on seaming nylon stretch hosiery prepared by Union Special as a result of findings of engineers in the field. — UNION SPECIAL MACHINE CO., 407 N. Franklin St., Chicago 10, Ill.

804. BOOKLETS ON FIDELITY MACHINES — Following booklets available: Fidelity "400". Fidelity Multi-Design Ribber, Fidelity Skein Reelers. — FIDELITY MACHINE CO., 3908-18 Frankford Ave., Philadelphia 24, Pa.

808. REINER WARPER — Full width and sectional warpers for all requirements in the knitting and weaving industry fully described in recent catalog. — ROBERT REINER, INC., Weehawken, N. J.

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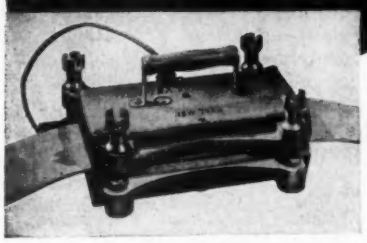

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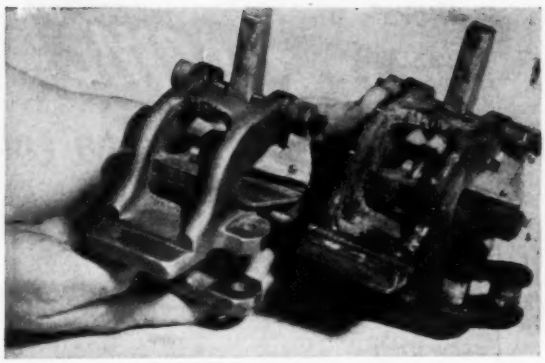

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818. FORGED HEAD ALUMINUM BEAMS — Bulletin 49-A shows new beam capable of holding high yardage of nylon and rubber warps, with specifications. Also describes permanent mold aluminum tricot and section beams. — MILTON MACHINE WORKS, INC., Milton, Pa.

828. THE KIDDE KNITTER — Bulletin describing this newest in Raschel-type warp knitting machines and higher production attained with it. — KIDDE MANUFACTURING CO., INC., Farrand St., Bloomfield, N. J.

SEWING MACHINES . . .

924. BUTT-TACKING SEWING MACHINE — Booklet describes an operating installation of the Merrow single thread butt-tacking sewing machine. Gives performance data, and advantages of butt-tacking. — THE MERROW MACHINE COMPANY, 28 Laurel Street, Hartford, Connecticut.

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1003. CASTERS AND WHEELS — 192 pages, describing casters and wheels suitable for all types of industrial applications. Every mechanical engineer and purchasing agent should have this. — DARNELL CORP., LTD., Long Beach 4, Calif.

1006. LANE CANVAS BASKETS — 16-page illustrated booklet describing the Lane line of canvas baskets for textile use. — W. T. LANE & BROTHERS, Poughkeepsie, N. Y.

1007. OVERHEAD HANDLING EQUIPMENT — 56 pages of illustrations showing successful applications of monorail systems to meet every kind of handling problem.—THE AMERICAN MONORAIL CO., 13106 Athens Ave., Cleveland 7, Ohio.

1008. CASTERS AND WHEELS — An illustrated booklet with complete specifications showing a complete assortment of Cotton Textile Casters. — THE COLSON CORP., Elyria, Ohio.

1009. HOW TO TEST CORRUGATED BOXES — 24-page booklet offers a comprehensive check-list by which to judge the protective qualities and durability of specific corrugated boxes. — HINDE AND DAUCH, Sandusky, Ohio.

1010. CONVEYOR KEY BOOK — A guide to production "step-ups" now possible with modern conveying. Shows time-and-effort savings. Well illustrated with photos showing plant layouts and sketches showing where, how and why different types of conveyors are used for maximumresults.—LOGAN CO., 1115 Franklin St., Louisville, Ky.

1015. OVERHEAD MATERIALS HANDLING — Three booklets available from Louden Machinery Co., treat economical material handling, twin fan ceiling cleaners, and shock proof electrification. — LOUDEN MACHINERY CO., Fairfield, Iowa.

1018. BALL BEARING TROLLEYS — 20 page catalog by Link Belt describes entirely new line of ball bearing trolleys for overhead conveyors. Contains pictures, specifications charts and diagrams. — LINK-BELT CO., 307 North Michigan Ave., Chicago 1, Illinois.

1019. HOW TO SELECT A LIFT TRUCK—An equipment analysis guide and rating table has been introduced by Hyster for comparison and selection of fork lift trucks. Gives an excellent means for price comparison between trucks of a similar nature. — HYSTER CO., 2902 N. E. Clackamas St., Portland 8, Oregon.

1021. CORRUGATED CONTAINERS — Brochure by Gaylord describes Multi-Unit and Bulk Containers which have been adapted for the textile field. — GAYLORD CONTAINER CORP., 111 N. 4th St., St. Louis 2, Mo.

1022. INDUSTRIAL TRACK EQUIPMENT — Color booklet describes SAFE-RAIL track developed as a supplement to the ZIG-ZAG power conveyor. Complete engineering data included. — RICHARDS-WILCOX MFG. CO., Aurora, Ill.

1030. CDF RECEPTACLES — This 32-page catalog, R-11, profusely illustrated in color, shows Continental-Diamond's line of boxes, trucks, cans, barrels, baskets and trays. Complete description and specifications are given on each item. — CONTINENTAL-DIAMOND FIBRE CO., Newark 11, Del.

1033. STRESSES ON OVERHEAD TRACKS — Booklet describes in detail stresses developed in various type tracks used for overhead materials handling systems. Track peening also covered. — CLEVELAND TRAMRAIL DIV., Wickliffe, Ohio.

MISCELLANEOUS . . .

1102. BALING PRESSES — An illustrated folder describing this manufacturer's complete line of balers for all materials. Both downstroke and upstroke models. — ECONOMY BALER CO., Ann Arbor, Mich.

1103. UNBRAKO SCREWS — Illustrated 16-page booklet No. 570 gives data on Unbrako hollow set screws, with knurled point, self-locking features. Includes miscellaneous screw and locking nut data. — STANDARD PRESSED STEEL CO., Jenkintown, Pa.

1105. SHADOGRAPH WEIGHING DEVICES — Bulletins describe scales for weighing, dyestuffs, cotton samples, wool yarn, cones of yarn. Pictures and complete information on each type of scale included. — EXACT WEIGHT SCALE CO., Columbus 8, Ohio.

1111. BRUSHES — A 26-page booklet is now available which describes and illustrates this manufacturer's line of brushes for the textile industry. —GASTONIA BRUSH COMPANY, Gastonia, N. C.

1112. THE RANDOM WEB PROCESS — Bulletin No. 101 describes the Rando-Webber and Rando-Feeder machines, and discusses the origin and development of the Random Web process which produces a non-oriented web suitable for processing into felts, wadding, heavy mats and non-woven fabrics on a continuous basis. Engineering data and cut-away diagrams. — CURLATOR CORPORATION, TEXTILE DIVISION, 565 Blossom Rd., Rochester, N. Y.

1113. MACHINE KNIVES — Catalog and price sheets describing this company's line of knives for use on textile machinery. — TAYLOR-STILES & CO., 21 Bridge St., Riegelsville, N. J.

1115. TEXTILE WRAPPING MACHINES — Brochure describing automatic wrapping machines for various types of textile products, including the new Hayssen V-Type Underfold, most protective package made. — HAYSSEN MANUFACTURING CO., Sheboygan, Wisconsin.

1122. BALING PRESSES — Bulletins available describing this company's line of motor-driven and hydraulic baling presses for finished-goods, textile fibers, wool, and waste of all kinds. — LOEMANN BROTHERS CO., 3150 West Burleigh St., Milwaukee, Wisconsin.

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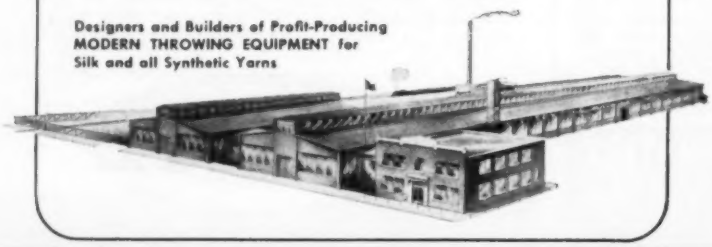

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What the TEXTILE MILLS are doing

(Continued from page 52)

qualities of stain-resistance and liquid-repellency. When liquids or foods are spilled on the cloth tiny globules appear on the surface but there is very little or no penetration through the fibers. Little ironing is required and color is not affected.

Initial installation has begun at **Outlook Manufacturing Co.**, Belmont, N. C., of 140 new seamless knitting machines for production of women's hosiery. The project is expected to be completed before the end of the year.

Poplar Textiles, Inc., Philadelphia, Pa., announced the combining of manufacturing and warehousing operations at a new plant at Amber and Willard Streets. For the current year a 50 per cent increase in production of men's hosiery is expected to be made possible by the expanded facilities.

Robinson Mills, Inc., Vista Drive, Gastonia, N. C., is no longer manufacturing hosiery. Employees formerly engaged in the full-fashioned hosiery production, have been transferred to the combed yarn mill, which continues at full capacity.

Southern Mercerizing Co. is scheduled to begin operations by June in the new quarters it recently acquired from the Kilburn Mill at Tryon, N. C. A new office building is being added. Buildings previously occupied by Southern Mercerizing at Tryon have been offered for sale, and employees have been given the opportunity to purchase the company's 57 houses.

Trio Dyeing & Finishing Co., Inc., is now in full production at 440 East 22nd St., Paterson, N. J. Stephen B. Doe, formerly with Nu-Dye & Finishing Co., is secretary and manager of the new concern.

Universal Textile Mills, Inc., will operate the first privately owned integrated textile plant in the Philippines. Spinning, weaving, and finishing mills to produce cotton fabrics and spun rayon are now under construction at the site a few miles from Manila. Completion is scheduled for August.

McCard Textile Co. of Bedford, Mass., has been bought by Nichols & Co., Inc., Boston, Mass., and the name of the company has been changed to **Nichols-McCard Corp.** No changes have been made in plant personnel, but selling is now handled by Nichols. Arthur O. Wellman is president of both companies.

The new million-dollar plant of **Phoenix Dye Works,** now under construction in Cleveland, Ohio, is scheduled to be in operation by the first of September. Machinery will be installed as soon as the roof is completed in July. Joseph Jones will be manager of the plant, which will serve the East. Facilities of the Chicago plant will then be devoted entirely to the West and Middle West.

F. K. Stevens, president and treasurer of **Piedmont Hosiery Mills, Inc.,** Hickory, N. C., has patented a needle control device for producing true wrap stripes in circular knit fabrics. The attachment, which combines reverse plate and wrap with a mesh area in hosiery, was developed by Mr. Stevens and Grover Davis, a fixer at the mill.

An expansion program under way at **Rhodes-Rhyne Mfg. Co.** in Lincolnton, N. C., includes construction of a 20,000 sq ft plant addition and installation of cleaning equipment, 56 looms, and new spinning equipment.

J. P. Stevens & Co., Inc., will complete the current phase of its modernization program at the Dunean plant in Greenville, S. C., by June or July. The project covers installation of long draft, large package spinning and modernization of weaving equipment at a total cost of approximately $2,400,000. The improvement is in line with the company's policy of keeping up with the trend in fabrics and with technological progress in spinning and weaving equipment.

Shelley Knitting Mills, Inc., recently increased its floor space to a total area of more than 64,000 sq ft. Additional knitting and sewing equipment was purchased at a cost of $150,000.

Tait Yarn Co., Inc., Lincolnton, N. C., has expanded its facilities by the addition of 10,000 sq ft of floor space. The number of spindles in operation has been increased from 6,000 to 7,600.

GARCIA LINE

G

Havana, Cuba

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the only complete service from the South direct to **HAVANA and ALL CUBA**

5 DIRECT SERVICES

WEEKLY
- **Charleston to Havana** *(Fortnightly calls at Savannah and Jacksonville)*
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- **Pensacola to Havana—EVERY 10 DAYS**
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Remove Selvage Ends Automatically from Woolens, Worsteds and Textured Fabrics

USE THE
HERMAS SELVAGE TRIMMER

At last, manufacturers of woolens, worsteds, terry cloth, and blankets can machine clean their goods automatically.

The Hermas Selvage Trimmer cleans *only* the selvages. It does not touch the face or back of goods. And it does the job at one pass, at rates up to 120 yards a minute.

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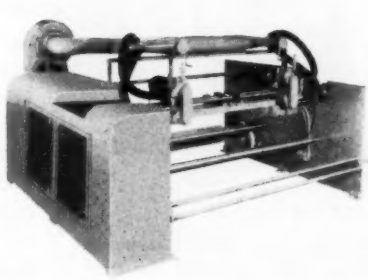

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Send me your 4-page folder describing your Selvage Trimmer for textured, woolen, worsted and plain goods.

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SUPPLIERS News

WHAT THEY ARE DOING

C. Richard Sword has been promoted to manager of sales for **Aerovent Fan Company, Inc.,** replacing James F. Tilton who resigned. Mr. Sword was formerly assistant manager of sales.

Arnold, Hoffman & Co., Inc., has consolidated its New England sales territory with the Teterboro, N. J., sales territory to form the "Northern Territory." Leonard G. Tubbs is sales manager, and a recent addition to the staff is Stanley W. Freeman, formerly a sales representative for General Dyestuffs Corp.

Newly appointed representatives for **Atlas Electric Devices Co.** are John K. Bice Co., 440 Seaton St., Los Angeles, for southern California; and Pacific Coast Chemicals Co., 2060 Third St., Berkley, for northern California.

Robert H. Smith recently joined the southern sales staff of **Amalgamated Chemical Corp.** to contact the general textile and hosiery trades in the

Mr. Smith

Carolinas and Virginia. His headquarters are at Greensboro, N. C.

Dick Chandler of Cincinnati, Ohio, is now southern district manager of the **Wilshire Power Sweeper Co.**

Atlanta Paper Company has installed a $440,000 rotogravure press that will print six colors at the rate of 1,000 feet of paperboard per minute. The new press enables the company to produce full-color reproductions on packaging for textiles and other products.

L. B. Lumpkin, who for seven years was manager of **The Bristol Company's** Birmingham, Ala., office, has been transferred to Pittsburgh, Pa., where he is district manager. Succeeding him at Birmingham is W. C. Petersen, who spent ten years with the company's New York sales force.

S. Blickman, Inc., has announced the appointment of Ben Becker as advertising and sales promotion manager. Formerly advertising manager for Bolsey cameras, Mr. Becker brings

Mr. Becker

to Blickman the experience of strong campaigning in highly competitive consumer fields.

Buffalo Forge Company has announced the appointment of John W. Rockwell as Atlanta, Ga., district representative, succeeding the late John J. O'Shea.

J. Guyton Boston has been appointed assistant director of marketing for **Celanese Corp. of America's** textile division, with headquarters in New York City. At Charlotte, N. C., R. P. Wilson has been appointed as special assistant to W. D. Clark, general sales manager of the textile division.

Daniel E. Lebane has joined **The Chromalloy Corp.** as manager of sales engineering. He is responsible for management of national sales involving the "Chromallizing" process.

Clinton Foods Inc. is building a two-story laboratory to provide enlarged research facilities for starch and other products used in the textile field and related industries. The

BROOK MOTORS give you every wanted feature yet they cost less!

1 H.P. TO 500 H.P.

Open Drip Proof, Totally Enclosed Fan Cooled, Totally Enclosed Non-Ventilated, NEMA "C" flange and "D" flange, Extended Shaft Pump Motors and Special Motors.

Brook Motors are precision built throughout, to surpass NEMA specifications. All over the world they have established a brilliant performance record for many years. **THEY COST EVEN LESS** than ordinary motors because of volume production and exclusive manufacturing techniques. Compare them feature for feature and you'll select a Brook. Send for Brochure.

● FAST DELIVERY OF ALL POPULAR MODELS:

Brook Motors are available from warehouses at Chicago; Dallas; Jersey City, N. J.; Los Angeles; San Francisco; Salt Lake City; Memphis, Tenn.; Savannah, Georgia; Seattle; Tampa, Fla.; and other major distributing points.

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The EMBLEM OF QUALITY METAL SHIELDS

For Spools and Bobbins

Anderson Shields are dependable protection against chipping, splitting, and breaking of spools, bobbins, and paper caps. Even the most minute details are carefully worked out to make Anderson the highest in precision, the smoothest in finish, the best in performance. The Anderson Emblem is your assurance of the finest shields you can buy.

Insist on Anderson when you order metal shields regardless of when you buy spools and bobbins.

TEXTILE SHIELD CO., INC.

J. N. ANDERSON, Treasurer

LAWRENCE, MASS., U. S. A.

building is scheduled to be ready for use by the spring of 1957. It will include a technical library, instrument rooms, and humidified and temperature-controlled rooms.

George W. Blackwood was recently elected president of **Dewey & Almy Chemical Co.** division of W. R. Grace & Co., and William L. Taggart, Jr., was elected executive vice-president.

At **Dixon Corporation,** Robert R. Miller has been elevated from vice-president to president, and William R. Potter has been named vice-president. John A. Crowe has joined the company to replace Mr. Potter as sales manager.

Walter M. Mitchell of **Draper Corporation** was elected an honorary member of Delta Kappa Phi at the fraternity's annual convention in Atlanta in April. * * * Draper is adding

Mr. Mitchell

a 20,000 sq ft addition to its Spartanburg, S. C., warehouse to increase storage space and allow for installation of a conveyor system to expedite shipment of loom parts, changeovers, and new attachments. * * * Recently acquired by Draper was Penfield Saw Works, Inc., Thomaston, Conn. Operations are being continued, with capacity for production of chain saw equipment increased to meet sales requirement.

Following a reorganization of **Du Pont's** textile fibers sales staff, regional managers named were Millard G. Gamble, Charlotte, N. C.; Charles D. Wenrich, New York; V. Ward Smith, Philadelphia; H. G. Buckley, Providence, R. I.; Howard P. Brokaw, Akron, Ohio. In the dyes and chemicals division Roy M. Barnes, Jr., was named to the newly created post of sales promotion manager.

John H. Collamore, Jr., has been appointed to the Rhode Island sales territory of **The Fairbanks Company.** As assistant to S. G. Redfield, Jr., he works out of the Boston branch office

WEAVE ROOM LUBRICATION NEWS

BEN BOY LUBRICANT No. 55-B

Hundreds of mills have found this lubricant will do an excellent job on Ball Bearings and all grease fittings.

GEARCO "A"

A new semi-fluid lubricant for Gears and Cams. Reports from the field and repeat orders indicate that "Gearco A" is doing a fine job. It may be the answer to YOUR problem.

Why not request a working sample of this new product?

Don't Forget These!

White Star Spindle Oil

Non-Melting Oils

Twister Ring Lubricants

GEORGIA CAROLINA OIL COMPANY

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MACON GEORGIA

SUPPLIERS News — WHAT THEY ARE DOING

and warehouse which services that area.

Jack H. Firpo, formerly sales manager of Woonsocket Color and Chemical Co., has been appointed official representative for the United States for **Compagnie Francaise des Matieres Colorantes,** manufacturer of dyestuffs and auxiliaries, of Paris, France. Mr. Firpo will have as his first task the setting up of a selling organization in the United States. It is planned to reactivate the subsidiary of the French concern, **Francolor, Inc.,** a New York corporation. For the last three years the company was represented in this country by American Aniline Products.

John A. Moore of **Foster Machine Co.** has been transferred from the engineering department at Westfield, Mass., to the Charlotte, N. C., office as manager. John Davenport, who covers the middle Atlantic area, has moved to Moorestown, N. J., to be closer to the mills he contacts.

Gifford-Wood Co. is now manufacturing and distributing the complete line of Eppenbach processing equipment for textile mills and other industries.

The **Hilton-Davis Chemical Co.,** division of Sterling Drug Inc., is now headed by Harold L. Hansen, vice-president. Dr. Hansen, who has been chairman of the quality control committee since 1947, succeeds the late James F. Thompson.

Dr. Hansen

Newly appointed representatives for **Hermas Machine Company's** textile machinery are: Harris & Underhill, 446 Statler Bldg., Boston, Mass., for the New England States; and James A. Love, 75 West Street, New York City, for the Middle Atlantic States.

The Howe Scale Co. has announced the appointment of Jack Bradt as sales manager of the truck division, which includes a variety of materials handling equipment.

Hugh Richmond of **Hyster Company** has been promoted from the engineering department of the company's home offices in Portland, Oregon, to the sales engineering department of the eastern industrial truck division at Danville, Ill.

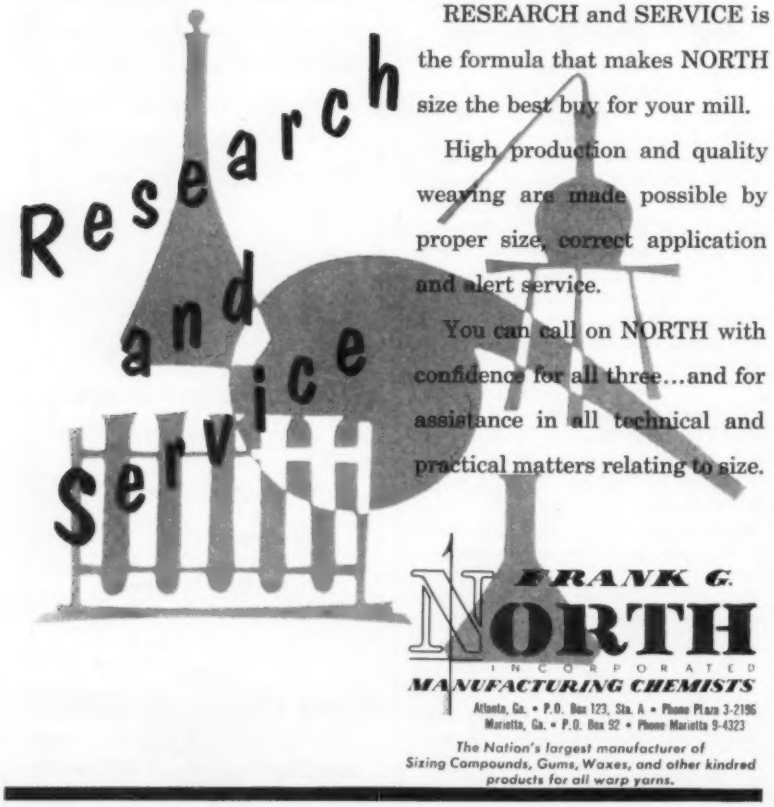
Mr. Richmond

Herbert M. Bailey, Jr., formerly sales manager of the Hartford Rayon Co., has joined the sales staff of **Industrial Rayon Corp.'s** nylon staple fiber division.

Mr. Bailey

William Kenyon & Sons (America) Ltd. has appointed J. W. Davis, P. O. Box 745, Columbus, Ga., as representative for its nylon tapes, bonding machine, and bonding strips in Alabama, Georgia, Mississippi, Tennessee, and Louisiana.

Following a complete change in ownership and management of **Kearny Manufacturing Co., Inc.,** Walter P. Rutley is now president. The former owner, C. F. Dulken, Sr.,



RESEARCH and SERVICE is the formula that makes NORTH size the best buy for your mill.

High production and quality weaving are made possible by proper size, correct application and alert service.

You can call on NORTH with confidence for all three...and for assistance in all technical and practical matters relating to size.

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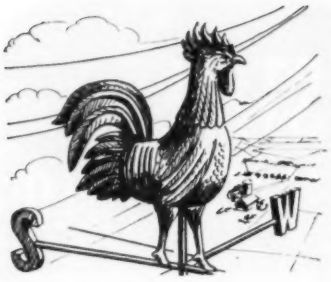
The Nation's largest manufacturer of Sizing Compounds, Gums, Waxes, and other kindred products for all warp yarns.



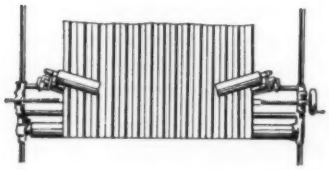
WORLD-FAMOUS **GUIDER . . . the weathervane has dependably guided man's activities for centuries**

WORLD-FAMOUS, **too . . . in textile manufacturing is the ever-dependable**

MECHO AIR GUIDER

FAMOUS FOR SAVING HUNDREDS AND HUNDREDS OF DOLLARS YEARLY BY

- **minimizing costly equipment repair "down-time"**
- **eliminating double edges and spattering**
- **speeding fabric processing**
- **preventing woven fabric spoilage**
- **maintaining cloth alignment and constant width**



Add to all the above advantages: no weights, levers, nor linkages to bother with, extremely low initial and operating costs, infinite adjustability to handle fabrics from the lightest to #8 duck, even in operation . . . then you'll understand why MECHO is considered the greatest buy in Guiders! *ORDER yours TO-DAY.* You'll wonder how you ever got along without it.

FREE! Write for Catalog and ask about MECHO's complete Guiding Service, standard in hundreds of finishing plants handling semi-rigid plastics, artificial leather and rubber, felt, and gauze. Stainless steel, acid- and moisture-resistant units with sealed bearings also available.

GUIDER **SPECIALTY COMPANY**
431 W. Rock Ave.
New Haven 15, Conn.

and all other officers and directors resigned as of Jan. 19, 1956.

John H. Foard is now a partner of W. A. Kluttz in the firm known as **Kluttz Machine & Foundry Co.** of Gastonia, N. C. Plans are to begin manufacture of spinning and twisting rings soon and to announce within the near future an entirely new ring and finish.

Paul W. Baker has been named special products representative for the Charlotte, N. C., office of the **Lassiter Corporation.** Mr. Baker was formerly vice-president of Chadwick mills.

Robert J. Jensen has joined the **S. C. Lawlor Company** as sales manager.

Kenneth S. Hunt is the newly appointed sales representative for the southern territory of the **Metlon Corporation.** He works out of the office of the Belton C. Plowden Co., Griffin, Ga.

Mr. Hunt

Alfred McGregor has joined **Metro-Atlantic, Inc.,** with the designation of supervisor in the dyestuff application laboratory.

Nopco Chemical Co. has established the Charles P. Gulick scholarship in honor of its late founder. The college scholarship, having a value of $750 per year for four years, will be awarded annually to the son or daughter of a Nopco employee.

North American Philips Co., Inc.'s research and control instruments division is now offering an extended-payment and lease contract plan for $2,500 to $50,000 orders covering the purchase of electron microscopes and other major equipment.

James Beattie is now production manager of **Plastic Mold & Engineering Co.,** and Edythe Sperry is sales promotion manager. Ward A. Robin-

Lower Production Costs!

with ROY 3 POINT PLAN

Here's how you can lengthen the life of your card grinders!

1. Install long life internal ball bearings.
2. Apply our special grease compound with a Roy grease gun on your worms and shells.
3. Insert SRS gears for cylinder grinding and SRDX gears for doffer grinding.

That's the proven 3 Point Plan, by B. S. Roy . . . foremost name in *"balanced"* grinders. For further details, contact our Gastonia, N. C. plant office.

"BALANCED" ROY GRINDERS

B. S. ROY & SON COMPANY
Worcester, Mass.

Sales Engineers in the South
Bill Cooper • Leon Frye • Bill Crowder
Southern Office and Plant
Linwood St., Gastonia, N. C.
Telephone Gastonia 4-2126

Call MILTON for dependable BEAMS

Light Metal featuring continuous welded construction

NYLON & RUBBER YARN BEAMS

FORGED HEADS
RIGID BARRELS

Forged heat-treated aluminum alloy heads and extra heavy wall barrels designed to withstand extreme pressures of monofilament; fine denier; low-turn nylon; and rubber yarns. 13¾" and 21" diameter heads.

SECTION BEAMS

Adaptable to all makes of warpers. Cast aluminum alloy heads and extruded aluminum barrels cannot shrink, swell, splinter or distort.

STEEL BARREL
WARP BEAMS
for BROAD, NARROW FABRIC, RIBBON, VELVET AND CARPET LOOMS

BROADLOOM BEAMS

for C & K and Draper Looms

Shown above is Milton's stud construction (also made with cast iron hubs).

RIBBON LOOM BEAMS

Adjustable head with fixed shaft, or fixed head with removable shaft.

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MILTON MACHINE WORKS
INCORPORATED
DESIGNERS • ENGINEERS • MANUFACTURERS
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SUPPLIERS News
WHAT THEY ARE DOING

son, sales manager of the Nylaclad and Plamenco division, is on leave of absence because of illness.

Additional processing equipment has been purchased by **Moretex Chemical Products,** as part of a general expansion program. Frank An-

Mr. Anderson

derson, with headquarters in Greensboro, N. C., has been appointed technical representative in the North Carolina-Virginia area.

National Ring Traveler Co. and Sterling Division opened a new office and warehouse at Gaffney, S. C., the first of April. The enlarged facilities

replace the Charlotte warehouse, and more complete stocks are carried. L. Everett Taylor heads the office as southern manager, assisted by Jesse B. Childers.

Recent additions to the staff of **Pneumafil Corporation** are Frank L. Wright, director of the manufacturing division; Rupert Melton, product manager of the sales division at Charlotte, N. C., specializing in central air and central materials recovery type systems; and Bernard C. Houston, service engineer in the New England area.

Russell Manufacturing Co. has appointed Weavings Corp., New York City, as national sales agents for its belting division. No change has been made in the sales and distributor

STEEL FOR THE TEXTILE FIELD

• STAINLESS STEELS
• CARBON STEEL BARS AND SHAPES
• PLATES AND SHEETS
• COLD-FINISHED SHAFTING
• STRUCTURALS

DIRECT FROM WAREHOUSE TO YOU

One of the South's largest and most complete varieties of steel warehouse products is your assurance of immediate shipment. Whether your order is for one piece or a carload, it will get the same rapid handling—24- to 48-hour delivery throughout the South. Next time call Atlantic for Steel and see what service *really* means.

FREE!
COMPLETE HANDBOOK

Latest stock and weight handbook.
Call or write for your free copy.

AMERICAN STEEL WAREHOUSE ASSOCIATION
BETTER DISTRIBUTION

WAREHOUSE DIVISION
Atlantic Steel Company
575 14th St. N.W., Atlanta 1, Georgia EMerson 3451

organization already set up by Russell.

South Carolina sales representative for **Product Sales, Inc.,** is George W. Parkinson, 3 Hammond St., Greenville. He replaces D. M. Dunlop who

Mr. Parkinson

Mr. Garnett

resigned because of ill health. Charles E. Garnett has joined the company as service representative for Georgia, Alabama, Tennessee, Mississippi, and Texas.

John A. England, Jr., assistant to the treasurer of **Saco-Lowell Shops,** has also been elected assistant secretary.

Thomas Howard McCamy recently joined **Seydel-Woolley & Co.** as sales representative in Tennessee, Ala-

Mr. McCamy

bama, and sections of Georgia. Prior to his present appointment Mr. McCamy had been overseer of dyeing at Pepperell Manufacturing Co. in Lindale, Ga., for nine years.

Herbert I. Segal has been elected president of **Van Norman Industries, Inc.,** owners of H. W. Butterworth & Sons Co.

The royalty agreement which was formerly required between the purchaser of **The Warner & Swasey Company's** whirlwind twister winder and the Deering-Milliken Research Trust has been abolished. The original purchase price of the machine now covers all costs, including initial setup and demonstration.

Daniel H. Lipman, vice-president and general sales manager of **Stein, Hall & Co., Inc.,** has also been elected a director of the company.

Harold E. Abbott is now assistant to the sales manager of **Ultra Chemical Works,** an associate of Witco Chemical Co. Mr. Abbott was founder of Abbott Chemical Co., and prior to that had been with Richards Chemical Works for ten years.

United States Testing Co. has announced the appointment of Alonzo Cowsert as manager of the San Angelo, Texas, wool laboratory. His duties include supervision of research in sampling and testing procedures for determining shrinkage, grade, and fiber strength, as well as regular processing of samples.

Vickers Incorporated has completed a new administrative and engineering center in suburban Detroit. The new 150,000 sq ft building is devoted entirely to research, development, engineering, sales, and administration, with a staff of more than 700 employees.

Now in operation in Atlanta, Ga., is **Jervis B. Webb Co.'s** new 22,400 sq ft plant, which houses complete manufacturing, engineering, and sales departments. The unit is equipped to design and produce many new types

Mr. Meyer

of conveyor systems to fill the specific requirements of southern industry. Howard L. Meyer is secretary and general manager, John Thompson is chief engineer, and Ted Schlinkert is chief estimator.

The following appointments are the result of changes in the sales organization of **Westvaco Mineral Products Division, Food Machinery and Chemical Corp.:** Raymond C. Tower, product manager of phosphates sales, New

Ain't it a grand and glorious feelin'!

You were scared. You thought you had cancer. So you did the thing *every* intelligent person does—you went to a doctor for a checkup.

And it wasn't cancer after all! Ain't it a grand and glorious feelin'!

Scientists are making progress against cancer. To keep this work going, money is needed.

So fight cancer with a check—and a checkup. Give to your Unit of the American Cancer Society, or mail your gift to CANCER, c/o your town's Postmaster.

American Cancer Society

CLASSIFIED ADS

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Rates are net, payable in advance each month. Page is 3 columns, 10 inches deep—30 inches to page. Space measured by even inch vertically by 1, 2 or 3 columns in width. Column width 2¼ inches.
Transient rate for display classified, $16.00 per inch.
Contract rate for space within 12 months period as follows:
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POSITION WANTED: 20c per word per insertion; minimum charge $4.00 Cash with order. Box Number address care of TEXTILE INDUSTRIES, 806 Peachtree St., N.E., Atlanta 5, Ga., count as eight words. Advertisements for help wanted, equipment for sale, for rent or wanted, and professional cards are accepted at display rates only.

POSITIONS OPEN—We can place knitting mill mgrs., supts., overseers and fixers; carpet supt.; purchasing agent; supt. southern coarse cot. yarn mill; wln. yarn mill supt.; wln.-wstd. weav. supt.; designers for wide and nar. fab.; textile instructor cot. card. and spin. OVERSEERS for cot. and wln. card.; cot. and wln. spin.; wln. napping; cot.-rayon piece dye.; synthetic fabric finish.; weav. nar. and wide fabrics; lace fabric finish.; pile fabric finish.; cloth room. SECOND HANDS for many depts. Chemists and laboratory men for mills, also for demonstrating and selling; chemical and mach. salesmen; master mechanics; time study-industrial engineers; text. school graduates; plush loom fixer. SEND US YOUR RESUME. Many attractive positions are open for top-notch men. No fee to be paid unless you accept employment through us. Negotiations are confidential.

CHARLES P. RAYMOND SERVICE, Inc.

OVER 55 YEARS IN BUSINESS

294 Washington St.
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TEXTILE CHEMIST

WE ARE A PROGRESSIVE AND EXPANDING COMPANY LOCATED IN THE UNITED STATES WITH A CANADIAN SUBSIDIARY. OUR PLANS INCLUDE THE ESTABLISHMENT OF LABORATORY FACILITIES IN MONTREAL TO SERVE THE TEXTILE INDUSTRY, PRIMARILY IN THE PROVINCE OF QUEBEC, ON A WIDE RANGE OF TEXTILE PRODUCTS. WE REQUIRE A GRADUATE CHEMIST WITH PLANT EXPERIENCE IN PRINTING AND FINISHING, WHO IS CAPABLE OF HANDLING TECHNICAL PROBLEMS, BOTH IN THE LABORATORY AND FIELD ON SPECIALTIES FOR SIZING, PRINTING AND FINISHING OF COTTON AND SYNTHETIC FIBRES. SOME DEVELOPMENT WORK MAY BE REQUIRED. GIVE DETAILS OF EDUCATION, EXPERIENCE AND SALARY REQUIREMENTS. Reply to Box 748, TEXTILE INDUSTRIES, 806 Peachtree Street, N. E., Atlanta 8, Ga.

TO SELL TO WOOLEN MILLS

WOOL SHODDY both reused and processed. Liberal commissions. Can be sold with other lines. Write: Minnesota Wool Stock Co., 243 Starkey Street, St. Paul, Minn.

LOOP DRYER AUTOMATIC SUITABLE FOR TUBULAR KNIT GOODS. MUST BE IN PERFECT CONDITION. APPLY SHAWIN CO. LTD., 8031 18th Ave., VILLE ST. MICHEL, QUEBEC, CANADA.

PROGRESSIVE EUROPEAN FIRM SPECIALIZED EXCLUSIVELY IN BUYING AND PROCESSING VISCOSE, ACETATE AND SYNTHETIC YARNS REQUIRES AGENTS U. S. A./CANADA, WELL INTRODUCED TEXTILE CIRCLES, CAPABLE OF HANDLING:

1.—REGULAR BUYING SUB-STANDARD YARNS OFFERED BY PRODUCERS.

2.—LOCATING AND PURCHASING ALL UNUSABLE PACKAGES OF YARN FROM SOLK WEAVERS, KNITTERS OF OUTER AND UNDER WEAR, THROWSTERS, ETC.

3.—LOCATING AND PURCHASING CHEAP LOTS OF YARN FROM MERCHANTS, ETC.

WILL OFFER GOOD COMMISSION, WITH POSSIBILITY EXCLUSIVE REPRESENTATION AFTER TRIAL. Reply to Box 757, TEXTILE INDUSTRIES, 806 Peachtree Street, N. E. Atlanta 8, Ga.

SALES REPRESENTATIVE WANTED

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SUPPLIERS News
WHAT THEY ARE DOING

York; Anthony G. Tappin, New York district manager; Justin A. Lewis, Cincinnati district manager; Robert E. Cochran, sales representative for the New Jersey area; Gil W. Lewis, manager of the newly created district based on the Philadelphia area; and John M. Richard, product manager of chlorine and alkali sales for the Westvaco Chlor-Alkali Division.

Warwick Chemical Co., division of Sun Chemical Corp., has appointed Robert G. Perriello as southerns district sales manager. Mr. Perriello is also manager of the company's Rock Hill, S. C., plant, where he maintains headquarters.

Mr. Perriello

The Chas. S. Tanner Co. recently appointed E. Hays Reynolds to their southern textile sales staff. Working from headquarters in Greenville, S. C., Mr. Reynolds serves the North Carolina, Virginia, and Tennessee areas. He was formerly connected with the Keever Starch Co.

Mr. Reynolds

Trundle Consultants, Inc., is the new name of The Trundle Engineering Co. of Cleveland, Ohio. The change was made in order to better identify all of the firm's services in the fields of management, marketing, industrial relations, manufacturing and engineering.

Following a recent merger the Mason-Neilan Regulator Co. became the **Mason-Neilan Division of Worthington Corp.** No changes were made in personnel.

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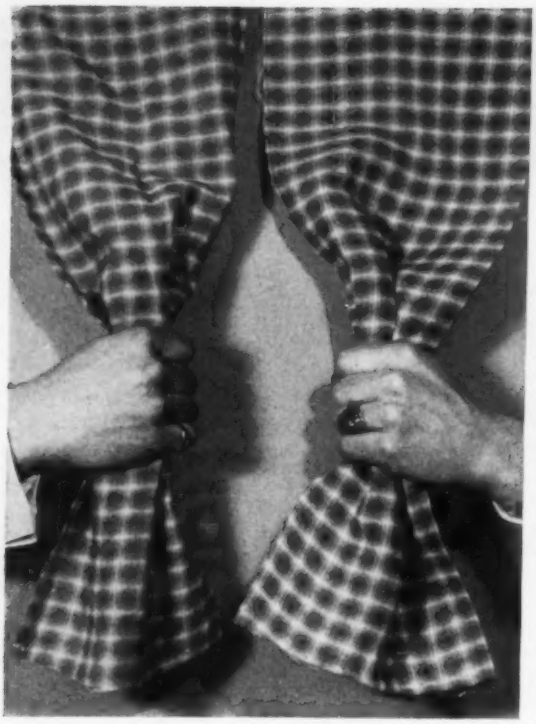

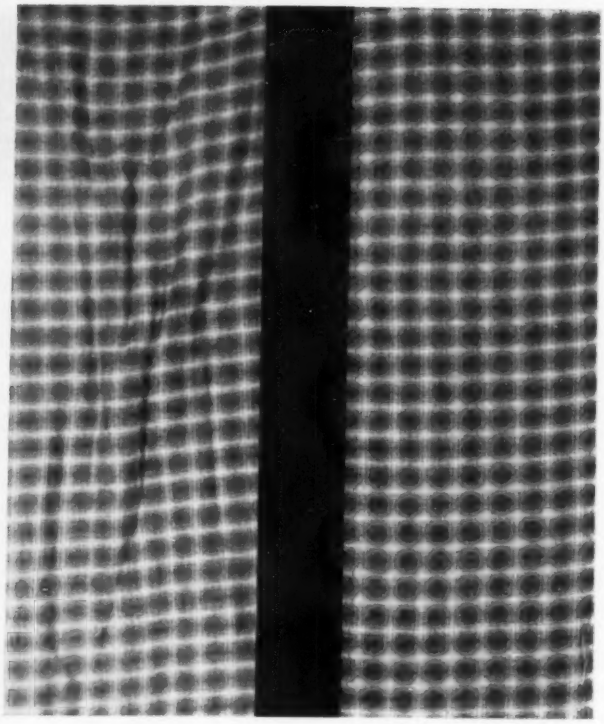

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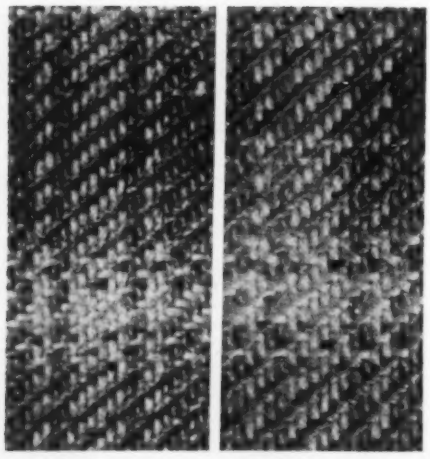

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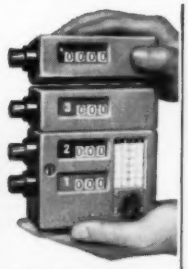

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